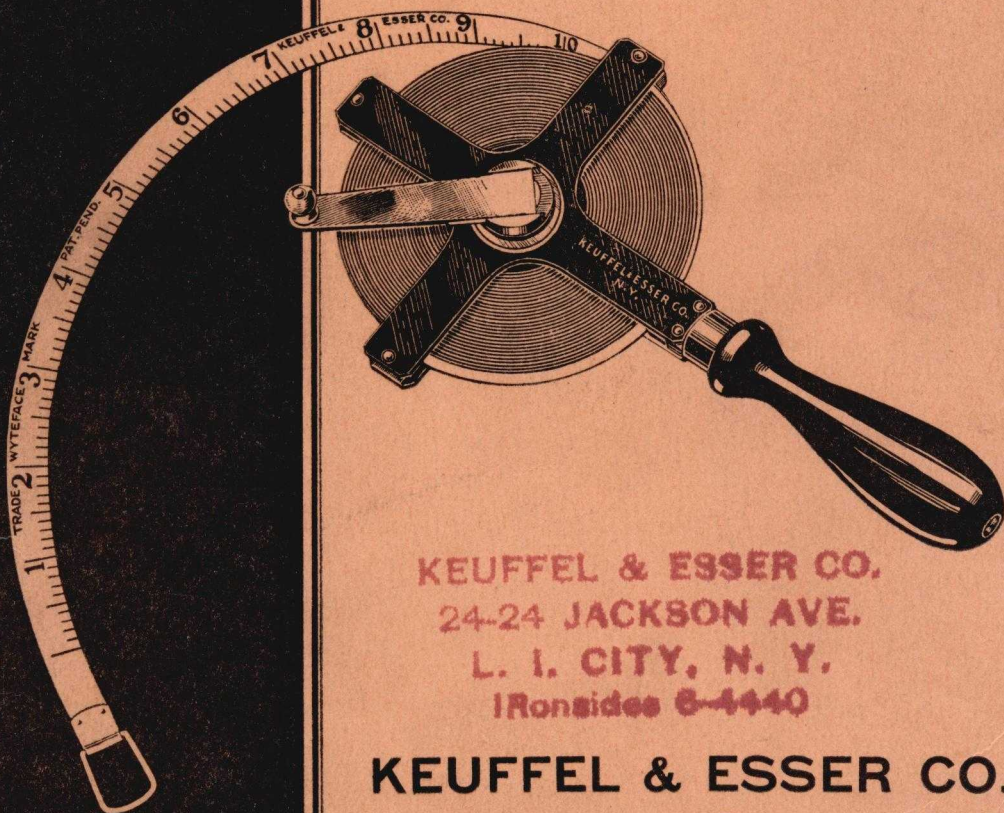


# K&E



# MEASURING TAPES

Folding Rules & Plumb Bobs



KEUFFEL & ESSER CO.  
24-24 JACKSON AVE.  
L. I. CITY, N. Y.  
Ronsides 6-4440

KEUFFEL & ESSER CO.

1936







# K & E

REG. U. S. PAT. OFF.

# MEASURING TAPES

Folding Rules & Plumb Bobs



## KEUFFEL & ESSER CO.,

NEW YORK, 127 Fulton Street,

General Office and Factories, HOBOKEN, N. J.

CHICAGO

ST. LOUIS

SAN FRANCISCO

MONTREAL

516-20 S. Dearborn St.

817 Locust St.

30-34 Second St.

7-9 Notre Dame St., W.

Drawing Materials, Mathematical and Surveying Instruments, Measuring Tapes.

---

---



Copyright 1936, by Keuffel & Esser Co.



KEUFFEL & ESSER CO., NEW YORK

## IMPORTANT NOTICE REGARDING OWNERSHIP OF GOODS IN TRANSIT.

There appears to be a misunderstanding on the part of some buyers in regard to the ownership of goods which are in transit between buyer and seller.

In order to avoid any misunderstanding, we would state, that when goods are sold f. o. b. shipping point the title passes to the consignee, and the consignor's responsibility for delivery or damage ceases, as soon as the latter obtains a receipt from the Transportation Company. Responsibility for their non-delivery rests with the Transportation Companies. The goods, therefore, must be paid for in accordance with agreed terms, even though they have not reached their destination.

Claims against the Transportation Companies must be made **by the consignee**. When requested we will furnish the necessary documents for making these claims. The Express Companies limit to **four months**, and the Freight Companies to **six months**, the period within which claims must be made, and this period **dates from the day of shipment**. The fact that notice has been given to the Transportation Company that the goods have not been delivered, and that a request has been made to trace them, does not serve to extend the period within which claims for damage or loss may be made.

---

---



**K & E**

REG. U. S. PAT. OFF.

## MEASURING TAPES.

These tapes, which are made in the K & E Factory in Hoboken, are recommended for their superiority in *design, material, workmanship, and accuracy*. They are graduated according to the U. S. Standard of the National Bureau of Standards at Washington, D. C.

### SUBDIVISIONS.

#### U. S. STANDARD

Steel Tapes in feet, inches and eighths have the foot graduated to inches ( $\frac{1}{8}$  foot) and each inch to eighths, making the ultimate graduation  $\frac{1}{8}$  inch, except the Liliput and Midget Tapes, which are graduated to  $\frac{1}{16}$  inch.

Steel Tapes in feet, tenths and hundredths of a foot, have the foot graduated into 10 parts and each  $\frac{1}{10}$  again into 10 parts, making the ultimate graduation  $\frac{1}{100}$  foot.

Woven Tapes in feet, inches and  $\frac{1}{2}$  inches, have the foot graduated to inches ( $\frac{1}{2}$  foot) and the inches to halves, making the ultimate graduation  $\frac{1}{2}$  inch, except the Piccolo Tape, which is graduated to  $\frac{1}{8}$  inch.

Woven Tapes in feet, tenths and half tenths of a foot have the foot graduated into 10 parts and each  $\frac{1}{10}$  into halves, making the ultimate graduation half tenths of a foot, except the Piccolo Tape, which is graduated to  $\frac{1}{10}$  and  $\frac{1}{100}$  foot.

Spring Winding Pocket Tapes: **Tip Top WYTEFACE Tapes** Nos. W7397 T-3 to -6 are graduated to inches in 16ths, Nos. W7397 TD-3 to -6 are graduated to inches in 16ths on one side, and to 10ths of feet in 100ths on the other side; Nos. W7397 TM-3 to -6 are graduated to inches in 16ths on one side, and to millimeters on the other side.

Spring Winding Pocket Tapes with Scale: **Tip Top WYTEFACE Tape** No. W7398 A is graduated to a scale of  $\frac{1}{8}$  in. to the foot on one side, and to a scale of  $\frac{1}{4}$  in. to the foot on the other side; No. W7398-4 is graduated to inches in 16ths on one side, and to a scale of  $\frac{1}{4}$  in. to the foot on the other side; and No. W7398-8 is graduated to inches in 16ths on one side and to a scale of  $\frac{1}{8}$  in. to the foot on the other side.

### METRIC.

Steel Tapes in **Metric** measure are graduated to half centimeters, the first decimeter to millimeters.

Woven Tapes in **Metric** measure are graduated to centimeters throughout.

Spring Winding Pocket Tapes in **Metric** Measure are graduated to millimeters throughout.

On all tapes in the **METRIC** measure, except Paine's pattern tapes, the measurement begins "on the line."

### SELF OPENING HANDLE.

The "Illinois," "Stevens," "Midget," "Armor," "Home," "Handy" and "Okeh" Steel Tapes and the "Piccolo" and "Popular" Woven Tapes have handles which are opened by pressure on a small pin in the back of the center. The handles of the "Cornell" "Rensselaer" and "Liliput" Steel Tapes and the "Harvard" Woven Tapes are opened by direct pressure on the end of the grip.



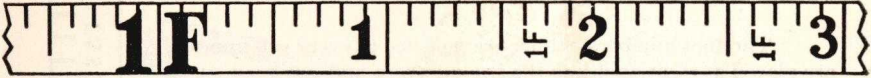


**K & E**

REG. U. S. PAT. OFF.

**WYTEFACE STEEL TAPES**

TRADE MARK



The **K & E WYTEFACE Steel Measuring Tapes**, described in the following pages, are the result of years of research, by **K & E Co.**, to overcome some of the inherent disadvantages of the ordinary type steel tapes.

The permanent white background of the **K & E WYTEFACE Steel Measuring Tapes** makes the black graduations and numerals so legible that they can be read without eyestrain, even when they are used in very dim light.

The **WYTEFACE** coating protects the steel line from corrosion, thus greatly prolonging the life of the **WYTEFACE** lines; since rust rather than wear is the usual cause of the obliteration of figures and graduation marks from the face of ordinary etched tapes.

The thickness of the **WYTEFACE** lines is not reduced by any etching process; consequently, the full temper or springiness and strength of the original line is retained. It is for this reason that **WYTEFACE** tapelines can be kinked only with difficulty. Since kinking is the usual cause of steel tape breakages, the possibility of breaking in the **WYTEFACE** steel tape lines is very greatly reduced.

The special coating used on the **WYTEFACE** lines will not crack, chip or separate from the steel, even if the tape is bent to the point of breaking.

The corrections usual to steel tapes—tension, temperature, etc.—apply with equal effect to **WYTEFACE**.

**KECO Finish.**



**KECO** finish produces a dense black background with etched steel graduations and numerals. **KECO** is as good a finish as can be given to any steel tape with a black background.



**K & E**

REG. U. S. PAT. OFF.

## “READY READING” TAPES

**Prevent Errors and Save Time.**

The foot numbers, which are repeated at every sub number, are placed at right angles to the sub numbers and are read *across* the tape instead of lengthwise. This arrangement facilitates reading and thus prevents errors and saves time. In making horizontal measurements greater than five feet, the tape user is “behind” his tape, so that this lateral position of the foot numbers is the most natural and convenient, for both horizontal and vertical measuring, as shown in the cuts below. Furthermore, it is much less confusing than where all numbers (foot and inch or tenth alike) are positioned longitudinally on the tape; in which case, foot numbers and sub numbers, being often duplicated, are frequently mistaken for each other.

The foot number *is repeated at every inch mark or tenth mark*, directly ahead of the sub number, throughout the entire length of the tape. This absolutely prevents mistakes in reading the tape, since there can never be the slightest doubt as to the number of *feet* measured at any point on the tape.

The great advantages of this system of numbering are instantly obvious to any one who uses a tape, and will be fully appreciated because almost everyone has made mistakes of a foot in measuring with tapes numbered in the ordinary way, with the foot figures appearing only once every twelve inches. Such mistakes are always troublesome, frequently costly and sometimes dangerous.



Much time is also saved by this system of numbering, as one need not look back to the beginning of the foot to see the foot number; since, on the contrary, it is constantly in front of the eye in close juxtaposition to every sub number.





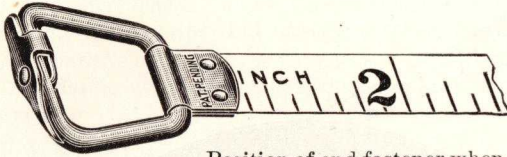


**K & E**

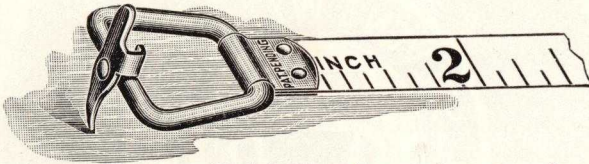
REG. U. S. PAT. OFF.

## END FASTENER

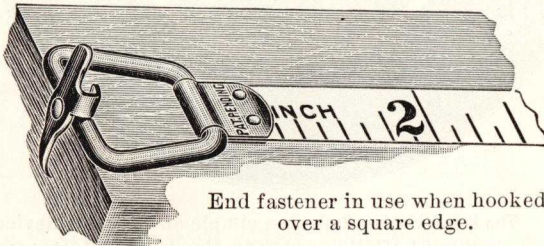
(Patented.)



Position of end fastener when not in use.



End fastener in use when pressed into yielding material.



End fastener in use when hooked over a square edge.

**K & E STEVENS, OKEH and DARTMOUTH** tapes (see pages 20, 23 and 30) are carried with the handy device known as the **K & E End Fastener** (patented.)

The **end fastener** permits of the use of a measuring tape by one person without the aid of another. The end fastener is a part of the end ring, to which it is securely attached, and it is easily swung out of the way when not in use. The illustrations plainly show the purpose and use of the tape with the **K & E End Fastener**.



**K & E**

REG. U. S. PAT. OFF.

## FRICITION BRAKE

(Patented.)



The **K & E Friction Brake** is a simple and durable device which maintains friction between the drum and the case in which it turns with just sufficient pressure to prevent the drum from rotating under the spring of the tape alone.

The operation of the Friction Brake is extremely simple. The spring (c), attached to the inside of the drum (d), causes the shoe (a) to press outwardly through an opening in the drum against the metal eyelet of the case (b). By this arrangement friction between the drum and case is maintained regardless of any slight wear of the faces of the shoe and eyelet.

By this means both "back lash" and binding of the line within the case are eliminated; "back spinning" of the handle is prevented; time in operation is saved; and the life of the tape considerably prolonged.

The patented **K & E Friction Brake** is applied to **K & E Steel Tapes** in cases (except the **Tip Top**).





# K & E

REG. U. S. PAT. OFF.

## STEEL TAPES

### WORKING TENSIONS

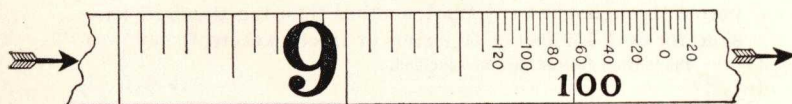
All K & E Steel Tapes are graduated to meet the requirements of the National Bureau of Standards at Washington. Those desiring an official Certificate of Comparison may send, or have us send, K & E Steel Tapes to the Bureau of Standards, where tests will be made under the conditions given on pages 10 and 11.

All K & E tapes 100 ft. long or less are graduated to require a tension of 10 lbs., and tapes longer than 100 ft. are graduated to require a tension of 20 lbs., when supported on a horizontal flat surface at 68° F. Metric tapes 30 meters long or less are graduated to require a tension of 4½ Kg., and those longer than 30 meters are graduated to require a tension of 9 Kg., when supported on a horizontal flat surface at a temperature of 20° C. The tension required for a Tape supported throughout on a horizontal flat surface is the same for any part of the tape as for the full length.

The tension required for a steel tape when supported at the ends will depend upon the unsupported length and the cross-sectional area of the tape. The value of this tension for any specific tape can be determined only by tests.

The coefficient of expansion of K & E Steel Tapes may be assumed to be 0.00000645 per degree Fahrenheit (0.0000116 per degree Centigrade).

### THERMOMETER SCALE



Ending of 100 foot tape with Thermometer Scale. Actual size.

#### F. S. Patent Thermometer Scale on 50 or 100 foot tape.

As a means of obtaining additional accuracy and uniformity in measuring, steel tapes with thermometer scale are recommended. This scale is graduated to correspond to the contraction and expansion of the tape, according to the Fahrenheit thermometer for tapes graduated in feet, or the Centigrade thermometer for tapes in metric measure. It takes the place of the terminal mark of the tape and the terminal point lies at that mark of the thermometer scale which corresponds to the prevailing temperature reading at the time of taking the measurement.

This scale cannot be applied to Liliput, Midget, Home, Handy, Okeh, and Armor; nor to tapes less than one-quarter inch wide, the latter exception including the Flat Wire Tapes listed on pages 36 and 37.



**K & E**  
REG. U. S. PAT. OFF.

## STEEL TAPES.

### OFFICIAL CERTIFICATE OF COMPARISON.

We can furnish a Certificate of Comparison by the National Bureau of Standards at Washington for any of the **K & E** Steel Tapes, the graduations of which **begin on the line**. The Bureau is not prepared to test tapes supported at points more than 150 feet or 50 meters apart; nor can it test a tape at any point which is not a point at which the tape is supported.

**NOTE:** Any of the **K & E** steel tapes are furnished, upon order, with graduations beginning on the line, without extra charge. The Bureau of Standards Certificate is given only to tapes with graduations beginning on the line, where these graduations are "**WYTEFACE**" or etched on the line. All other tapes are eligible for a Report from the Bureau, the Report giving the data usually furnished in a Certificate, but without the official Certification.

The prices for comparing are those charged by the Bureau; and **do not include** the transportation charges to and from Washington, which are extra.

**Sa.**—Determination of correction to the total length of the tape when supported throughout at standard tension and at standard temperature, for each 150 feet or 50 meters or fraction thereof

**NOTE**—This is the regular standard test required by the Bureau of Standards; and which must be made and charged for in each case to determine whether or not the tape is entitled to the Bureau's certification. To this amount must be added the fees for any additional tests made, and for Item (Sm), if applicable, in accordance with the following schedule:—

**Sb.**—Determination of the correction to the total length when supported throughout at any tension other than the standard tension, for each 150 feet or 50 meters or fraction thereof.

The tension desired must be specified.

**Sc.**—Determination of the correction to the total length when supported at the ends only.

The Bureau is not prepared to make this test on tapes having a greater length than 150 feet or 50 meters.

Standard tension will be used unless another tension is specified.

**Sd.**—Determination of the correction to the total length when supported at the ends and one or more intermediate points, for each 150 feet or 50 meters or fraction thereof.

Standard tension will be used unless another tension is specified.

**Se.**—Determination of the correction to the length of a subinterval under the same conditions as to tension and points of support as for total length.

The points at which these measurements are made must be points at which the tape is supported. The Bureau is not prepared to test tapes supported at points more than 150 feet or 50 meters apart.



KEUFFEL & ESSER CO., NEW YORK

## OFFICIAL CERTIFICATE OF COMPARISON.

(CONTINUED)

**Sf.**—Determination of the correction to the length of a subinterval under different specified conditions as to tension and points of support from those used for the total length.

**Sg.**—Determination of the tension to the nearest integral half pound or quarter kilogram at which the correction to the length of an interval is most nearly zero, under a specified condition of support, for each 150 feet or 50 meters or fraction thereof.

**Sh.**—Determination of the correction to a subinterval at the tension at which the correction to the total length is most nearly zero, and under the conditions of support used in the test under item (Sg).

**Si.\***—Determination of the coefficient of expansion of a tape for each 150 feet or 50 meters, or fraction thereof.

Five-sixths of the above fee is a charge to cover the cost of cooling the tape testing laboratory. In case several tapes are tested at one time this portion is prorated. All of the tapes need not be submitted from the same source.

**Sj.**—Determination of Young's modulus of elasticity for each 150 feet or 50 meters or fraction thereof.

Not obtainable for "WYTEFACE" lines, for which substitute test Sn.

**Sk.**—Determination of the weight per foot or per meter of a tape.

**Sl.**—Testing spring balance accompanying tape.

**Sm.**—Additional charge for each tape sent without a reel, for each 150 feet or 50 meters, or fraction thereof.

**Sn.**—Determination of A.E.

**So.**—Computed values.

**Sp.**—Testing "Lo-Var" base line tapes or wires. Prices on the above tests or their equivalents quoted on request.

**Special schedule will be furnished upon request.**

**Sx.**—Copies of certificates or reports previously issued or reissue of worn or damaged certificates or reports returned.

**Sz.**—For special tests not covered by the above schedule, fees will be charged dependent upon the nature of the test.

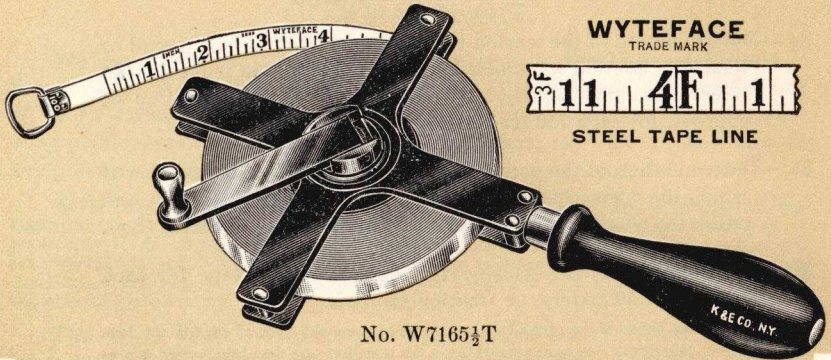
\* Since this test is a very expensive one, it is advisable to have it made only where a tape is to be employed for work requiring a very high degree of accuracy. For K & E Steel Tapes it is safe to assume the coefficient of expansion as 0.00000645 per degree Fahrenheit (0.0000116 per degree Centigrade).



**K & E**  
REG. U. S. PAT. OFF.

## WYTEFACE STEEL TAPES

TRADE MARK



**TEXAS WYTEFACE** Steel Tapes  $\frac{3}{8}$  in. wide, on aluminum frame, black hardened surface, large center with long folding handle, all mountings nickelplated and highly polished. Black finished grip. Tapes are furnished on frames with 4 arms, except the 50 feet and 15 meter lines which are furnished on frames with 2 arms. Graduations begin on the line.

"Ready Reading" Length in feet,	50	100	150	200
	No. W7162 T	W7165 T	W7166 T	W7167 T
Feet, inches & 8ths . . . . .	W7162 D	W7165 D	W7166 D	W7167 D
Metric, to $\frac{1}{2}$ cm. throughout (one side only)	15	30	50	
	No. W7162 M	W7165 M	W7166 M	
Metric, other side feet, inches & 8ths	W7162 TM	W7165 TM	W7166 TM	

Note: On metric tapes the first decimeter is divided to millimeters.

**TEXAS WYTEFACE** Steel Tapes  $\frac{3}{8}$  in. wide, on aluminum frame, black hardened surface, large center with lock handle, all mountings nickelplated and highly polished. Black finished grip. The 100 ft. tapes are furnished on frames with 4 arms, and the 50 ft. tapes on frames with 2 arms. Graduations begin on the line.

"Ready Reading". Length in feet	50	100
Feet, inches & 8ths . . . . .	No. W7162 $\frac{1}{2}$ T	W7165 $\frac{1}{2}$ T
Feet, 10ths & 100ths ft. . . . .	W7162 $\frac{1}{2}$ D	W7165 $\frac{1}{2}$ D

For illustration of folding handle, see cut of No. W7175D, page 13.



**KECO BLACK FINISH TAPES**  
with etched graduations will be furnished  
if so ordered.



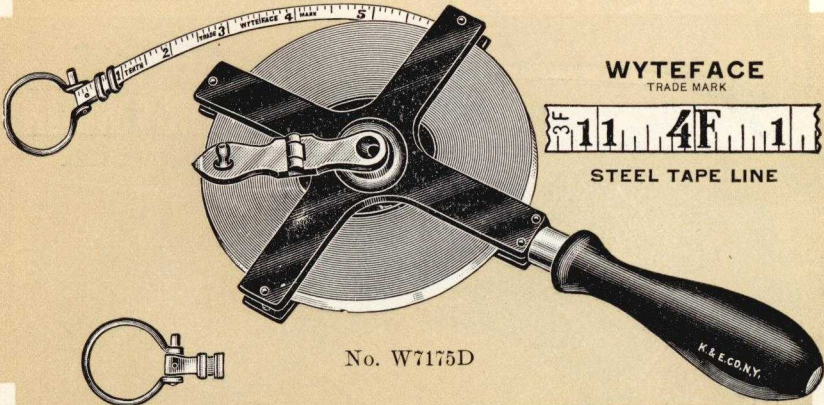
KEUFFEL & ESSER CO., NEW YORK

**K & E**

REG. U. S. PAT. OFF.

## WYTEFACE STEEL TAPES

TRADE MARK



**WYTEFACE**

TRADE MARK

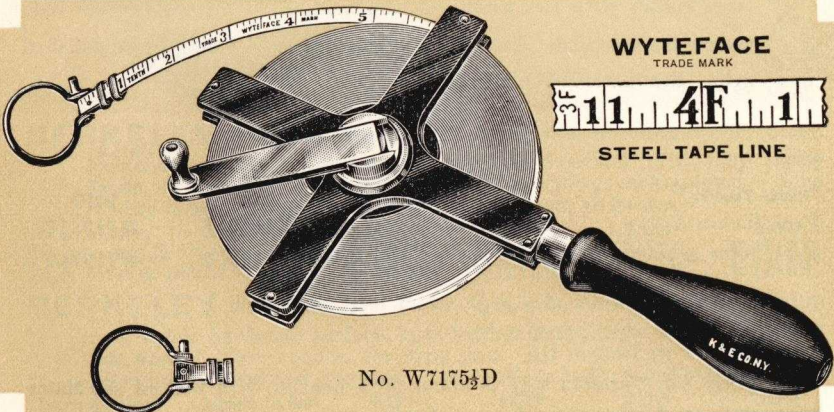


STEEL TAPE LINE

No. W7175D

**MAINE** WYTEFACE Steel Tapes,  $\frac{1}{4}$  in. wide, Paine's Pattern, on aluminum frame, black hardened surface, large center with long folding handle, all mountings nickelplated and highly polished, two handles for tape line. Line readily detached from reel. Black finished grip. Tapes are furnished on frames with 4 arms, except the 50 ft. tapes, which are furnished with 2 arms. Graduations begin at end of line.

"Ready Reading" Length in feet,	50	100	150	200
Feet, inches & 8ths . . . . .	No. W7172T	W7175T	W7176T	W7177T
Feet, 10ths & 100ths ft. . . . .	W7172D	W7175D	W7176D	W7177D



**WYTEFACE**

TRADE MARK



STEEL TAPE LINE

No. W7175½D

**MAINE** WYTEFACE Steel Tapes, as described above, except that the reel is equipped with a lock handle.

"Ready Reading" Length in feet,	50	100	150	200
Feet, inches and 8ths . . . . .	No. W7172½T	W7175½T	W7176½T	W7177½T
Feet, 10ths & 100ths ft. . . . .	W7172½D	W7175½D	W7176½D	W7177½D



**KECO BLACK FINISH TAPES**  
with etched graduations will be furnished  
if so ordered.



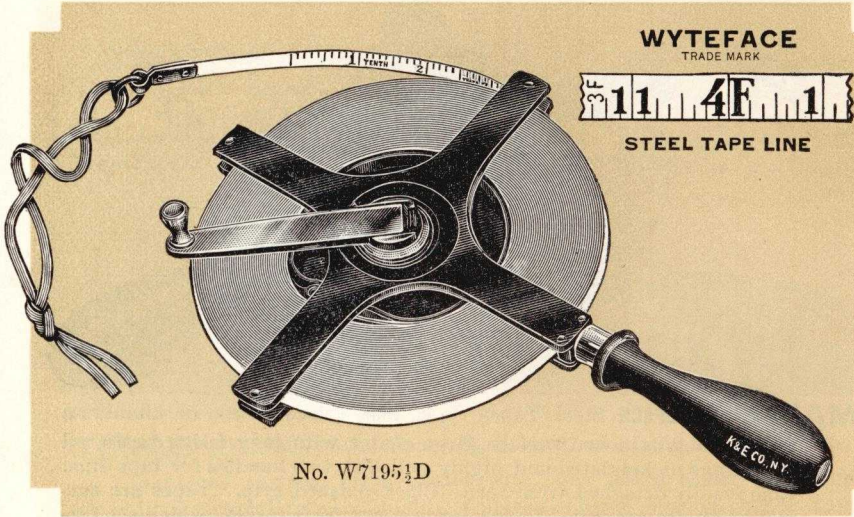


**K & E**

REG. U. S. PAT. OFF.

# WYTEFACE STEEL TAPES

TRADE MARK



No. W7195 $\frac{1}{2}$ D

**VERMONT** TRADE MARK **WYTEFACE** Steel Tapes,  $\frac{1}{4}$  in. wide, about 50% heavier than Maine tape, on 4 arm aluminum frame, black hardened surface, large center with **lock handle**, all mountings nickelplated, two rawhide thongs for tape line. Line readily detached from reel. Black finished grip. Graduations begin on the line.

"Ready Reading."	Length in feet,	100	200
Feet, inches & 8ths . . . . .		No. W 7195 $\frac{1}{2}$ T	W 7197 $\frac{1}{2}$ T
Feet, 10ths & 100ths ft. . . . .		W 7195 $\frac{1}{2}$ D	W 7197 $\frac{1}{2}$ D

Since the Vermont line is about 50% heavier than that of the Maine tapes, it is much stronger and more able to withstand hard service. The reel is correspondingly larger, more sturdy, and has a larger drum.



**KECO BLACK FINISH TAPES**  
with etched graduations will be furnished  
if so ordered.



KEUFFEL & ESSER CO. NEW YORK

**K & E**

REG. U. S. PAT. OFF.

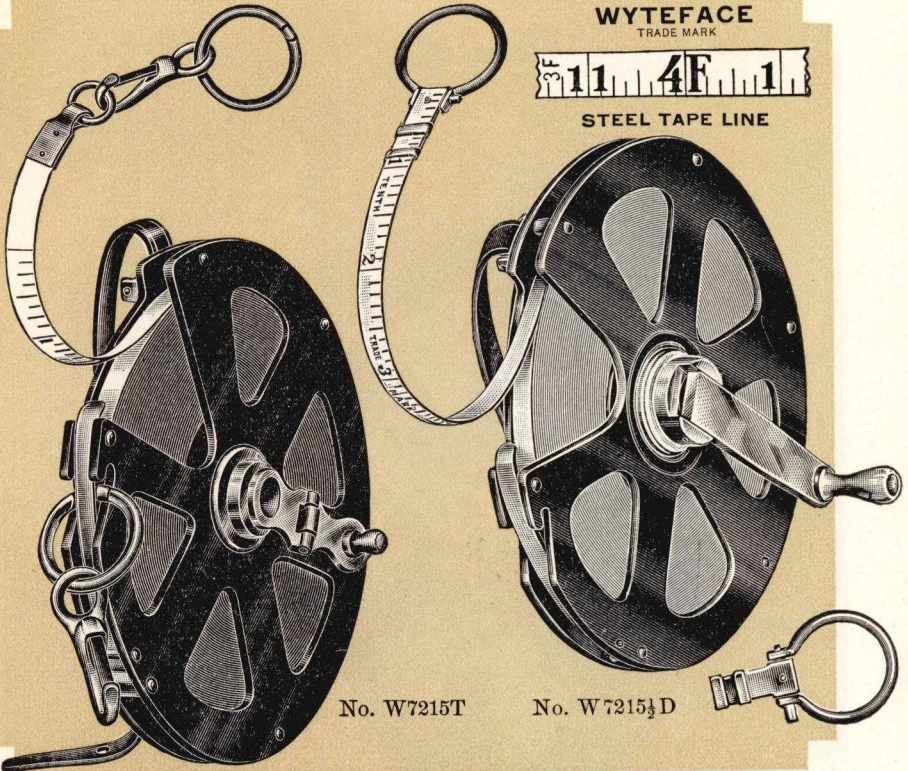
# WYTEFACE STEEL TAPES

TRADE MARK

**WYTEFACE**  
TRADE MARK



STEEL TAPE LINE



No. W7215T

No. W7215 1/2 D

**BERKELEY WYTEFACE** Steel Tapes, 1/4 in. wide, aluminum reel, black hardened surface, with leather strap, large center with long folding handle. Two handles for tape line. All mountings nickel plated. Line readily detached from reel. Graduations begin on the line.

"Ready Reading"	Length in feet,	50	100	200	300
Feet, inches & 8ths . . . .	No. W7212T	W7215T	W7217T	W7218T	
Feet, 10ths & 100ths ft. . .	W7212D	W7215D	W7217D	W7218D	

**BERKELEY WYTEFACE** Steel Tapes, 1/4 in. wide, Paine's Pattern, aluminum reel, black hardened surface, with leather strap, large center with long lock handle. Two handles for tape line. All mountings nickel plated. Line readily detached from reel. Graduations begin at end of line.

"Ready Reading"	Length in feet	50	100	200	300
Feet, inches & 8ths . . . .	No. W7212 1/2 T	W7215 1/2 T	W7217 1/2 T	W7218 1/2 T	
Feet, 10ths & 100ths ft. . .	W7212 1/2 D	W7215 1/2 D	W7217 1/2 D	W7218 1/2 D	
	Length in Meters,	30	50		
Metric to 1/2 cm. throughout (one side only)	No. W7215 1/2 M	W7216 1/2 M			
Metric, other side feet, inches & 8ths	W7215 1/2 TM	W7216 1/2 TM			

Note: On metric tapes the first decimeter is divided to millimeters.



**KECO BLACK FINISH TAPES**  
with etched graduations will be furnished  
if so ordered.



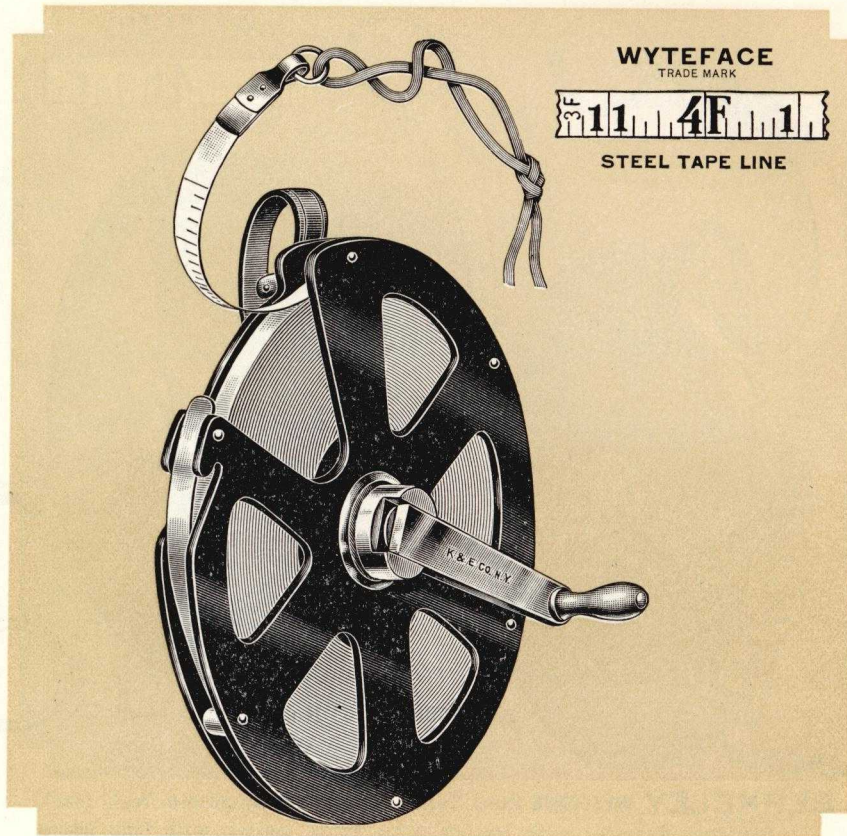


**K & E**

REG. U. S. PAT. OFF.

# WYTEFACE STEEL TAPES

TRADE MARK



No. W7225 $\frac{1}{2}$  D

**STANFORD WYTEFACE** Steel Tapes,  $\frac{1}{4}$  in. wide, about 50% heavier than the Berkeley tape, aluminum reel, black hardened surface, with leather strap handle, large center with long lock handle. Two rawhide thongs for tape line. All mountings nickelplated. Line readily detached from reel. Graduations begin on the line.

"Ready Reading."

Length in feet,

100

Feet, 10ths & 100ths ft. . . . . No. W7225 $\frac{1}{2}$  D

Since the Stanford line is about 50% heavier than that of the Berkeley tapes; it is much stronger and more able to withstand hard service. The reel is correspondingly larger, more sturdy, and has a larger drum.



**KECO BLACK FINISH TAPES**  
with etched graduations will be furnished  
if so ordered.





**K & E**  
REG. U. S. PAT. OFF.

## WYTEFACE STEEL TAPES.

TRADE MARK



**WYTEFACE**  
TRADE MARK



STEEL TAPE LINE

**CORNELL WYTEFACE** Steel Tapes,  $\frac{3}{8}$  in. wide, stout bent leather case, patent center, long swiveling flush folding handle, opened by pushing handle grip from opposite side of case. **Patented friction brake.** Nickel-plated mountings. Graduations begin at outside end of ring.

"Ready Reading".	Length in feet.	25	50	100
Feet, inches & 8ths . . . . .	No.	W 7250 T	W 7252 T	W 7255 T
Feet, 10ths & 100ths ft. . . . .		W 7250 D	W 7252 D	W 7255 D

Graduating Cornell **WYTEFACE** Steel Tapes to 16ths inches throughout, additional charge.

## STAINLESS STEEL TAPES.

**NATURAL FINISH.**

**CORNELL** Steel Tapes are also furnished with Stainless Steel lines.

TRADE MARK

In all other respects these tapes conform to the description given under Cornell Steel Tapes above, except that they are not **WYTEFACE**.

"Ready Reading".	Length in feet.	25	50	100
Feet, inches & 8ths . . . . .	No.	X 7250 T	X 7252 T	X 7255 T
Feet, 10ths & 100ths ft. . . . .		X 7250 D	X 7252 D	X 7255 D

**HOME** Stainless Steel Tapes  $\frac{3}{8}$  in. wide. In all other respects these tapes conform to the description given under **Home** Steel Tapes on page 20.

TRADE MARK

"Ready Reading".	Length in feet.	25	50	100
Feet, inches & 8ths . . . . .	No.	X 7350 T	X 7352 T	X 7355 T
Feet, 10ths & 100ths ft. . . . .		X 7350 D	X 7352 D	X 7355 D



**KECO BLACK FINISH TAPES**  
with etched graduations will be furnished if so ordered, but not on stainless steel.





**K & E**

REG. U. S. PAT. OFF.

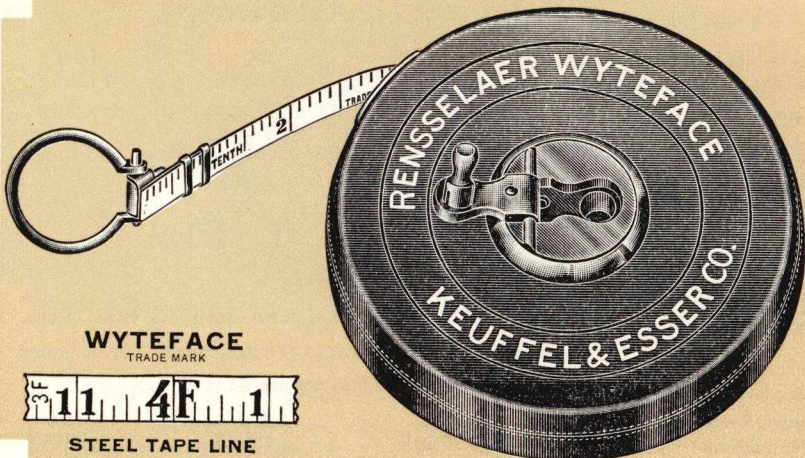
## WYTEFACE STEEL TAPES.

TRADE MARK



**LILIPUT** TRADE MARK **WYTEFACE** Steel Tapes,  $\frac{1}{4}$  in. wide, stout bent leather case, patent center, long swiveling flush folding handle, opened by pushing handle grip from opposite side of case. Patented friction brake, Nickel-plated mountings. Graduations begin at outside end of ring.

"Ready Reading".	Length in feet,	<b>25</b>	<b>50</b>
Feet, inches & 16ths . . . . .	No.	<b>W7270T</b>	<b>W7272T</b>
Feet, 10ths & 100ths ft. . . . .		<b>W7270D</b>	<b>W7272D</b>



**RENSSELAER** TRADE MARK **WYTEFACE** Steel Tapes,  $\frac{1}{4}$  in. wide, Paine's Pattern, stout bent leather case, patent center, long swiveling flush folding handle, opened by pushing handle grip from opposite side of case. Patented friction brake. Two handles for tape line. Nickelplated mountings. Line readily detached from case. Graduations begin at end of line.

"Ready Reading".	Length in feet,	<b>50</b>	<b>100</b>
Feet, inches & 8ths . . . . .	No.	<b>W7292T</b>	<b>W7295T</b>
Feet, 10ths & 100ths ft. . . . .		<b>W7292D</b>	<b>W7295D</b>



**KECO BLACK FINISH TAPES**  
with etched graduations will be furnished  
if so ordered.





**K & E**

REG. U. S. PAT. OFF.

# WYTEFACE STEEL TAPES.

TRADE MARK



**WYTEFACE**  
TRADE MARK



**STEEL TAPE LINE**

**ILLINOIS WYTEFACE** Steel Tapes,  $\frac{1}{4}$  in. wide, Paine's Pattern, stout bent black leather case, large center with long folding self-opening handle. Patented friction brake. Two handles for tape line. Chromium-plated mountings. Line readily detached from case. Graduations begin at end of line.

"Ready Reading".	Length in feet,	<b>50</b>	<b>100</b>
Feet, inches & 8ths . . . . .	No. W 7302 T	W 7305 T	
Feet, 10ths & 100ths ft. . . . .	W 7302 D	W 7305 D	
	Length in Meters,	<b>15</b>	<b>30</b>
Metric, to $\frac{1}{2}$ cm. throughout (one side only) . .	No. W 7302 M	W 7305 M	
Metric, other side feet, inches & 8ths . . . .	W 7302 TM	W 7305 TM	

Note: On Metric tapes the first decimeter is divided to millimeters.



**KECO BLACK FINISH TAPES**  
with etched graduations and brown leather case will be furnished if so ordered.

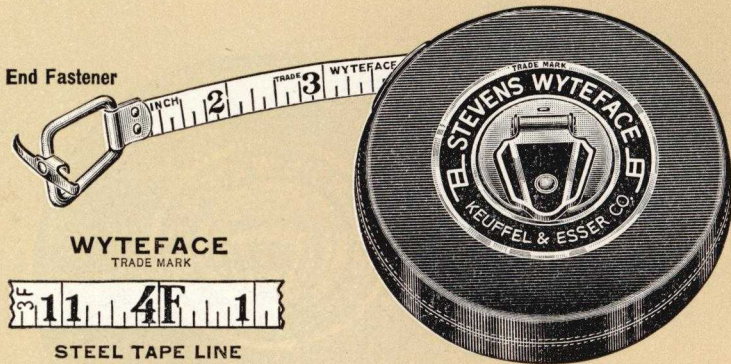


**K & E**

REG. U. S. PAT. OFF.

# WYTEFACE STEEL TAPES.

TRADE MARK



No. W7352P.

**STEVENS WYTEFACE** Steel Tapes,  $\frac{3}{8}$  in. wide, stout bent black leather case, large center, long folding self-opening handle. Patented friction brake. Chromium-plated mountings. Graduations begin at outside end of ring.

"Ready Reading".	Length in feet,	25	50	100
Feet, inches & 8ths . . . . .	No. W7350T	W7352T	W7355T	
Feet, inches & 8ths with K & E End Fastener	W7350P	W7352P	W7355P	
Feet, 10ths & 100ths ft. . . . .	W7350D	W7352D	W7355D	

	Length in Meters,	15	30
Metric to $\frac{1}{2}$ cm. throughout (one side only)	No. W7352M	W7355M	
Metric, other side feet, inches & 8ths . . .	W7352TM	W7355TM	

**Note:** The graduations of metric tapes begin on the line; and the first decimeter is divided to millimeters.



**KECO BLACK FINISH TAPES**,  $\frac{3}{8}$  in. wide, with etched graduations and brown leather case embossed "HOME"\* will be furnished if so ordered.

HOME tapes with KECO finish and lines  $\frac{1}{2}$  in. wide can be furnished to order at the prices specified in the Price List.

For Home Stainless Steel Tapes see Nos. X7350 to X7355, page 17.

\* TRADE MARK





**K & E**

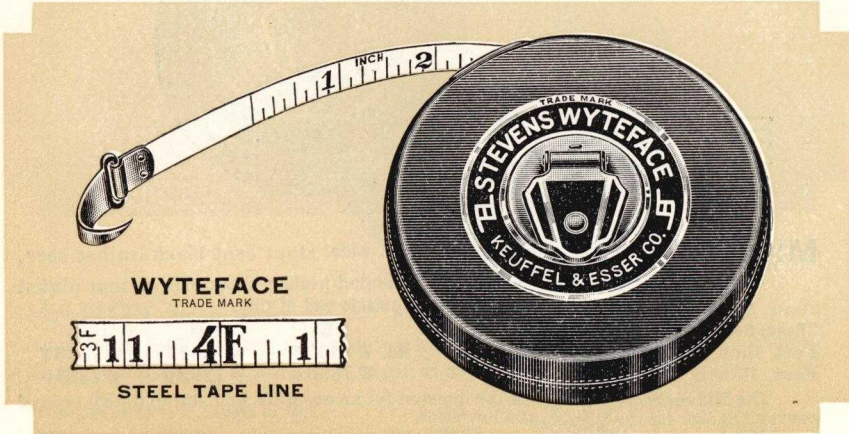
REG. U. S. PAT. OFF.

## WYTEFACE STEEL TAPES.

TRADE MARK

### DIAMETER (TREE) TAPES

(FORESTER'S TAPES)



**W7356. STEVENS WYTEFACE** <sup>TRADE MARK</sup> Steel Diameter (Tree) Tape,  $\frac{3}{8}$  in. wide, 20 feet; one side in feet, 10ths and 100ths of a foot, other side graduated to give diameter in inches and 10ths of an inch consecutively up to 76 inches direct from a circumference measurement; stout bent black leather case, long folding self-opening handle. **Patented friction brake.** Chromium-plated mountings. Hinged end hook for fastening to tree, which fits in orifice in edge of case when not in use. Graduations begin **on the line.**

**W7357. STEVENS WYTEFACE** <sup>TRADE MARK</sup> Steel Diameter (Tree) Tape, as described under No. W7356, but 50 feet long, and with reverse side graduated to give diameter in feet, inches and 10ths of an inch direct from a circumference measurement.

**W7358. STEVENS WYTEFACE** <sup>TRADE MARK</sup> Steel Diameter (Tree) Tape as described under No. W7356, but 50 feet long; and one side graduated in feet, inches and 8ths of an inch, other side graduated to give diameters in feet, inches, and 64ths of an inch direct from a circumference measurement. The diameter equivalents of 64ths of an inch are given in an extra diameter inch before zero.

For other diameter tapes, see page 24.



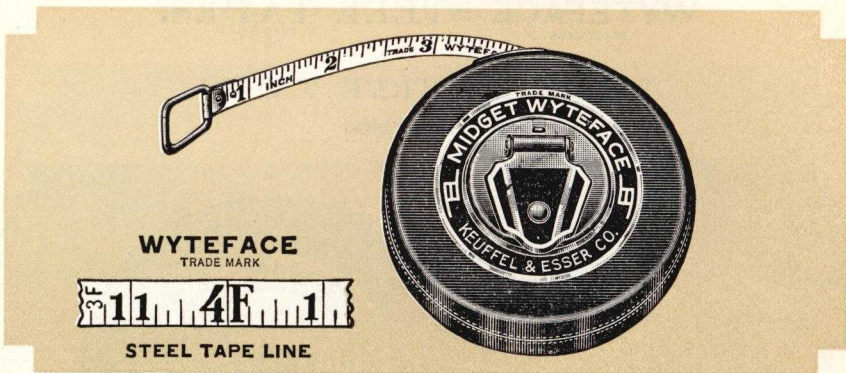
**KECO BLACK FINISH TAPES**,  $\frac{3}{8}$  in. wide. with etched graduations and brown leather case embossed "HOME" will be furnished if so ordered.





## K & E STEEL TAPES.

REG. U. S. PAT. OFF.



**MIDGET WYTEFACE** Steel Tapes,  $\frac{1}{4}$  in. wide, stout bent black leather case, long folding self-opening handle. Patented friction brake. Chromium plated mountings. Graduations begin at outside end of ring.

"Ready Reading"	Length in feet.	25	50	100
Feet, inches & 16ths . . . . .	No.	W7360T	W7362T	W7365T
Feet, 10ths & 100ths ft. . . . .		W7360D	W7362D	W7365D

The Midget Steel Tape meets the demand for an accurate and durable steel tape of convenient size for the pocket, at a low price.



### KECO Finish.

**ARMOR** Steel Tapes,  $\frac{3}{8}$  in. wide, strong steel case, large center with long folding self-opening handle. Patented friction brake. Case and mountings nickelplated. Graduations begin at outside end of ring.

"Ready Reading"	Length in feet,	25	50	100
Feet, inches & 8ths . . . . .	No. 7370T	7372T	7375T	
Feet, 10ths & 100ths ft. . . . .		7372D	7375D	

	Length in Meters,	15	30
Metric to $\frac{1}{2}$ cm. throughout (one side only) . . .	No. 7372M	7375M	
Metric, other side feet, inches & 8ths . . . . .	7372TM	7375TM	

**Note:** The graduations of metric tapes begin on the line; and the first decimeter is divided to millimeters.



**MIDGET TAPES, KECO BLACK FINISH**  
with etched graduations and brown leather case will be furnished if so ordered.

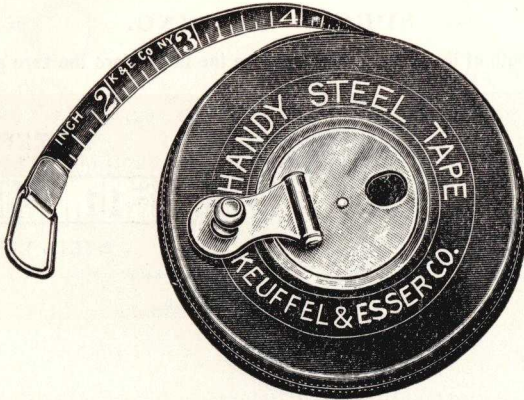




## K & E STEEL TAPES.

REG. U. S. PAT. OFF.

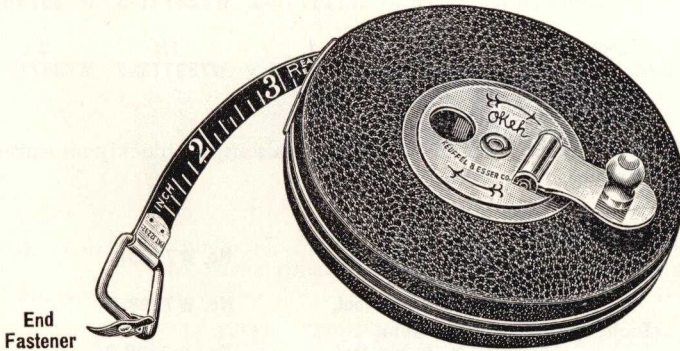
KECO Finish.



**HANDY** Steel Tapes,  $\frac{3}{8}$  inch wide, black sewed leatherite case, plain center with long folding, self-opening handle. Patented friction brake. Nickel-plated mountings. Graduations begin at outside end of ring.

"Ready Reading"	Length in feet,	25	50	100
Feet, inches & 8ths . . . . .	No. 7383T	7384T	7386T	
Feet, 10ths & 100ths ft. . . . .	7383D*	7384D*	7386D*	

\*To order only.



**O'Keh** Steel Tapes,  $\frac{3}{8}$  inch wide, strong metal case covered with leatherite, self-opening handle Patented friction brake. Nickelplated mountings. Graduations begin at outside end of ring.

"Ready Reading"	Length in feet.	25	50	100
Feet, inches & 8ths . . . . .	No. N7390	N7392	N7395	
Feet, inches & 8ths, with K & E End Fastener	N7390P	N7392P	N7395P	

Nos. N7390 to N7395P are old Nos. 7890 to 7890P.



# TIP TOP

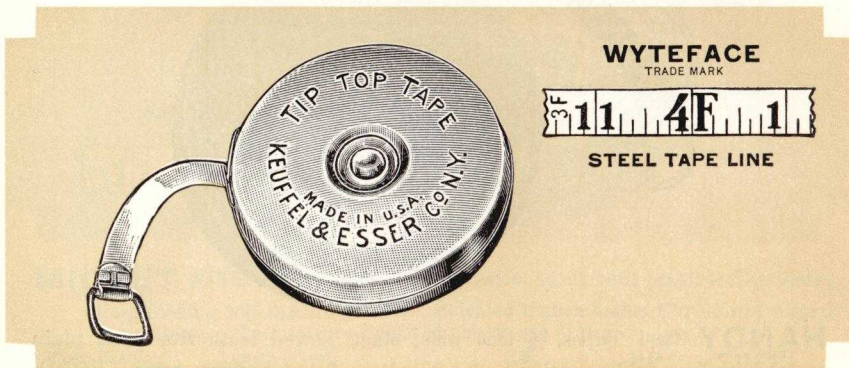
REG. U. S. PAT. OFF.

## WYTEFACE STEEL POCKET TAPES.

TRADE MARK

### SPRING WINDING.

The length of these tapes is marked on the line before the zero point.



**TIP TOP WYTEFACE** Steel Pocket Tapes,  $\frac{1}{4}$  in. wide, nickelplated case, spring winding, with stop at center. Graduations begin on the line.

Length in inches,	36	60	72
Inches to 16ths (one side) . . . . .	No. W7397T-3	W7397T-5	W7397T-6
Inches to 16ths, other side,			
feet to 10ths and 100ths ft. . . . .	W7397TD-3	W7397TD-5	W7397TD-6
Length in Meters,	1	1½	2
Inches to 16ths, other side millimeters	No. W7397TM-3	W7397TM-5	W7397TM-6

**TIP TOP WYTEFACE** Steel Pocket Tapes with scale, for quickly measuring scale drawings, blue prints, etc.

Length in inches,	60
Scale $\frac{1}{8}$ in. to the foot, other side	
scale $\frac{1}{4}$ in. to the foot,	No. W7398A
Inches to 16ths, other side	
scale $\frac{1}{4}$ in. to the foot,	No. W7398-4
Inches to 16ths, other side	
scale $\frac{1}{8}$ in. to the foot,	No. W7398-8

**W7399. TIP TOP WYTEFACE** Steel Pocket Diameter Tape,  $\frac{1}{4}$  in. wide, 10 feet; one side in feet, inches and 16ths of an inch, other side graduated to give diameter in inches and 64ths of an inch direct from a circumference measurement. The diameter equivalents of 64ths of an inch are given in an extra diameter inch before zero.

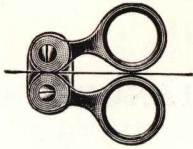
For other Diameter Tapes, see page 21.

For description of WYTEFACE Tape Lines, see page 5.



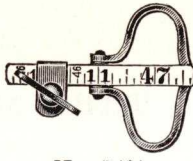


## HANDLES FOR TAPES.



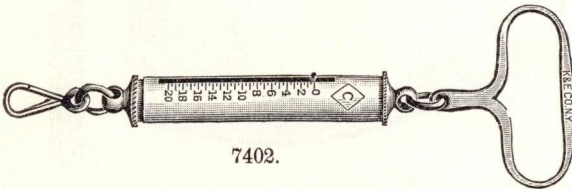
No. 7400.

**7400. Clamping Handles**, Brass, nickelplated, for gripping any part of a tape to exert tension.

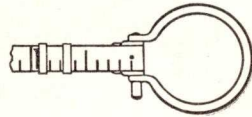


No. 7401.

**7401. Clamping Handles**, brass, bronzed, to attach to any part of tape to exert tension.



7402.



No. 7405.

**7402. Tension Handles**, brass, nickelplated, indicating tension up to 20 lbs., reading by half pounds.

**7402M. Tension Handles**, like No. 7402, but indicating tension up to 10 Kilograms.

**7403. Tension Handles**, like No. 7402, but indicating tension up to 30 lbs.

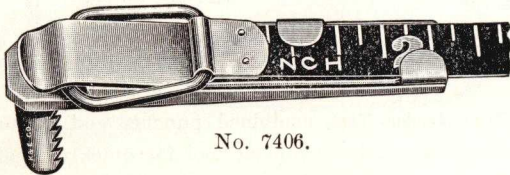
**7403M. Tension Handles**, like No. 7402, but indicating tension up to 15 Kilograms.

These tension handles form a very valuable addition to a tape, since they enable the user to apply exactly the tension at which the tape is standard. They are recommended, also, for use with the fine narrow tapes.

**7405. Plain Brass Handles**, Nickelplated, for Paine's Pattern Tapes.

No. 7405 is old No. 7390.

## TAPE HOOK

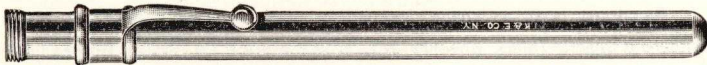
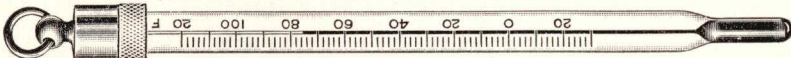


No. 7406.

**7406. Tape Hook**, aluminum, for tapes  $\frac{3}{8}$  inch wide; fitting K & E Cornell, Stevens, Home, Handy, Armor and Okeh tapes in feet and inches.

No. 7406 is old No. 7395.

## POCKET THERMOMETERS.



**7408. Pocket Thermometers**, mercurial, 5 in., Fahrenheit, opal glass scale reading to 2 degrees from  $-30^{\circ}$  to  $+120^{\circ}$ ; in nickelplated brass Case.

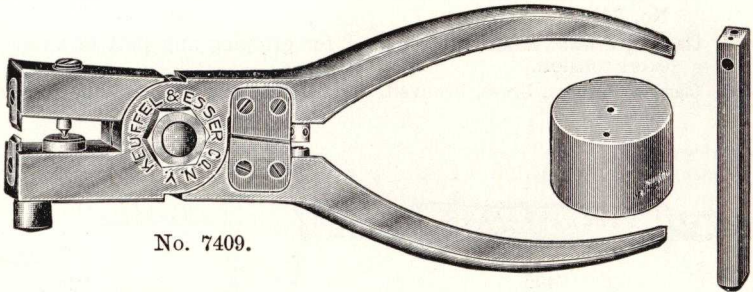
No. 7408 is old No. 5930.



**K & E**  
REG. U. S. PAT. OFF.

## STEEL TAPES.

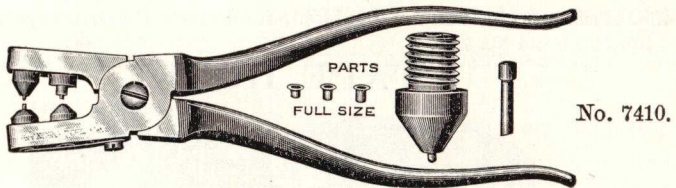
### TAPE MENDING APPLIANCES.



No. 7409.

**7409. K & E Tape Mending Outfit**, one punching pliers with end nipper, shears and hammer, all combined in one tool. One extra punch for pliers. One rivet set, one small anvil. One box of rivet pins. One clamp, several pieces of  $\frac{3}{8}$  in. tape steel; in canvas bag.

No. 7409 is old No. 7095.



No. 7410.

**7410. K & E Tape Mending Tool**, combined puncher and riveter, 8 in., a light and convenient tool for quickly repairing tapes in the field.

Tool, with 1000 eyelets (500 each of two sizes).

**Extra eyelets** (500 in a package).

No. 7410 is old No. 7098.

## REPAIRING TAPES.

Repairs on steel or woven tapes will be promptly attended to at a moderate charge, either at the General Office, Hoboken, N.J., or at the K & E Co. Branch Houses in New York, Chicago, St. Louis, San Francisco and Montreal.



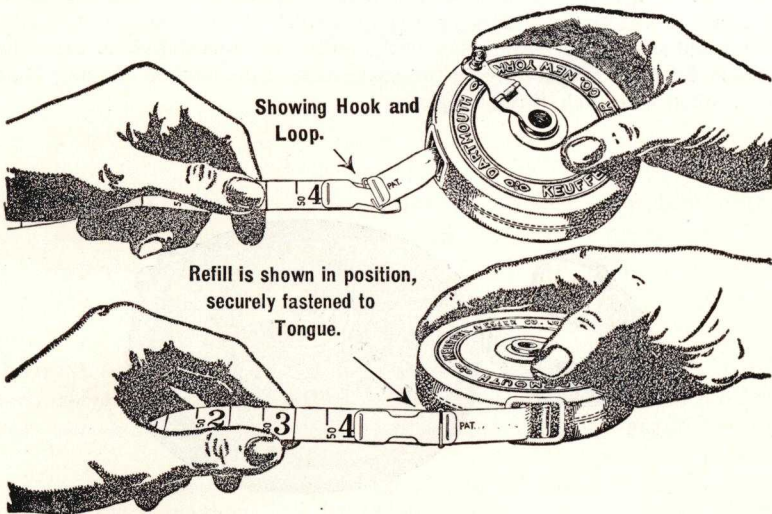
KEUFFEL & ESSER CO., NEW YORK

**K & E**  
REG. U. S. PAT. OFF.

## WOVEN TAPES.

**K & E Woven Tapes** are manufactured from the best material obtainable. They are impregnated and finished by a special process so that they will stand up under severe use. However, all woven tapes, both linen and metallic, of any make, are liable to stretch or shrink. Hence woven tapes should never be used for exact measurements, for which an accurate steel tape should be employed.

### METHOD OF INSERTING RE-FILLS IN TAPE CASES.



The above illustrations show the method employed for inserting K & E re-fills in tape cases. A short strip (or tongue) of woven tape line is attached by a loop to the binding post of the tape case. The other end of the tongue has a special form of hook over which is slipped the specially constructed loop in the end of the re-fill, in the manner shown in the illustration.

K & E Harvard, Dartmouth, Piccolo, Excelsior and Samson Tapes are furnished with this patented tongue, and re-fills for the above tapes have this type of loop.



**K & E**

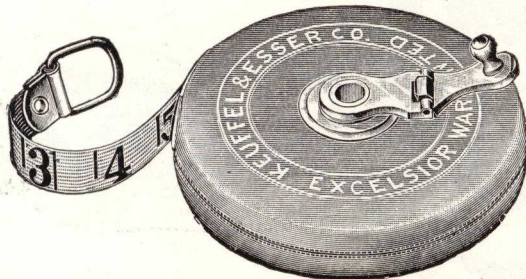
REG. U. S. PAT. OFF.

## WOVEN TAPES

### EXCELSIOR ENGINEER'S TAPE.

REG. U. S. PAT. OFF.

**Excelsior Engineer's Tape** is a woven tape in the best bent leather case. One side is marked in feet, tenths and half tenths for ordinary measurements, while the other side is marked for setting Slope Stakes or for finding the center from the Slope Stakes after the Center Stake has been removed. The Slope Stake markings are as follows: graduations are placed at every foot and half foot for 13 feet from the end of the ring, and numbered in black from 13 at the end of the ring to 0 at 13 feet in from the end of the ring. From the 0 mark onward the graduations are spaced at  $1\frac{1}{2}$  times their designated markings, i. e. the graduation 1 ft. is actually 1.5 ft. from 0 and so on. The final mark, 24, is actually 36 ft. from the 0 mark. The tape eliminates calculation of distance out to toe of slope; reduces the work of the levelman to a minimum; and saves considerable time in the setting of slope stakes. A pamphlet—"How to Set Slope Stakes"—giving full particulars of the method of using them, is supplied with each of these tapes.



**\*7411. EXCELSIOR Engineer's Metallic Woven Tape, Ward's Patent, 50 feet, of same quality as No. 7442 (page 30) in bent leather case, long folding handle. For roadbeds up to 26 ft. wide, and slopes of  $1\frac{1}{2}$  to 1. Graduations begin at outside end of ring. All mountings nickelplated. With Directions.**

**\*Made to order only.**





**K & E**  
REG. U. S. PAT. OFF.

## WOVEN TAPES.



**HARVARD** TRADE MARK Metallic Woven Tapes,  $\frac{5}{8}$  in. wide, stout bent leather case, long flush folding handle, opened by pushing handle grip from opposite side of case. All mountings nickelplated. Leather reinforced end. Graduations begin at outside end of ring.

<b>"Ready Reading."</b>	<b>Length in feet,</b>	<b>25</b>	<b>50</b>	<b>75</b>	<b>100</b>
Feet, inches & $\frac{1}{2}$ in. . . . .	No. 7420T	7422T	7424T	7425T	
Feet, 10ths & half 10ths ft. . . . .	7420D	7422D	7424D	7425D	
<b>Length in Meters.</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>	<b>30</b>
Metric, to cm. throughout . . . . . (one side only)	No. 7421M	7422M	7423M	7424M	7425M
Metric, other side feet, inches & $\frac{1}{2}$ in.	7421TM	7422TM	7423TM	7424TM	7425TM

**Note:** The graduations of metric tapes begin on the line.

For lines without cases (Re-fills), see page 30.



**K & E**  
REG. U. S. PAT. OFF.

## WOVEN TAPES.



**DARTMOUTH** TRADE MARK Metallic Woven Tapes,  $\frac{5}{8}$  in. wide, stout bent leather case, long folding handle. All mountings nickelplated. Leather reinforced end. Graduations begin at outside end of ring.

"Ready Reading"	Length in feet,	25	50	75	100	
Feet, inches & $\frac{1}{2}$ in. . . . .	No. 7440 T	7442 T	7444 T	7445 T		
" " " with K & E End Fastener	7440 P	7442 P	7444 P	7445 P		
Feet, 10ths & half 10ths ft. . . . .	7440 D	7442 D	7444 D	7445 D		
Feet, inches, $\frac{1}{2}$ in. and Links . . . . .	7440 TL	7442 TL	7444 TL	7445 TL		
Feet, 10ths, half 10ths ft. and Links . .	7440 DL	7442 DL	7444 DL	7445 DL		
	Length in Meters,	10	15	20	25	30
Metric to cm. throughout . . . . .	No. 7441 M	7442 M	7443 M	7444 M	7445 M	
(one side only)						
Metric, other side feet, inches & $\frac{1}{2}$ in.	7441 TM	7442 TM	7443 TM	7444 TM	7445 TM	

## METALLIC WOVEN TAPES REFILLS

### FOR HARVARD AND DARTMOUTH TAPES.

"Ready Reading"	Length in Feet	25	50	75	100	
Feet, inches & $\frac{1}{2}$ in. . . . .	No. 7460 T	7462 T	7464 T	7465 T		
" " " with K & E End Fastener	7460 P	7462 P	7464 P	7465 P		
Feet, 10ths & half 10ths ft. . . . .	7460 D	7462 D	7464 D	7465 D		
Feet, inches, $\frac{1}{2}$ in. and Links . . . . .	7460 TL	7462 TL	7464 TL	7465 TL		
Feet, 10ths, half 10ths ft. & Links . . . . .	7460 DL	7462 DL	7464 DL	7465 DL		
	Length in Meters,	10	15	20	25	30
Metric to cm. throughout . . . . .	No. 7461 M	7462 M	7463 M	7464 M	7465 M	
(one side only)						
Metric, other side feet, inches, & $\frac{1}{2}$ in.	7461 TM	7462 TM	7463 TM	7464 TM	7465 TM	

Note: The graduations of metric tapes begin on the line.

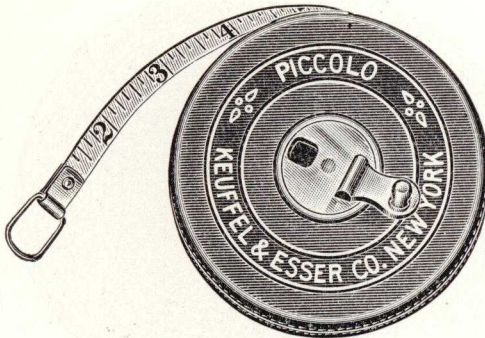




**K & E**

REG. U. S. PAT. OFF.

## WOVEN TAPES.



**PICCOLO** Metallic Woven Tapes,  $\frac{7}{16}$  in. wide, stout bent leather case, TRADE MARK  
large center, long folding self-opening handle, all mountings nickel-plated, line reinforced with leather. Graduations begin at outside end of ring.

"Ready Reading."	Length in feet,	25	50
Feet, inches & 8ths . . . . .	No. N7480 T		N7482T
Feet, 10ths & 100ths ft. . . . .	N7480D		N7482D

## METALLIC WOVEN TAPES RE-FILLS

FOR PICCOLO TAPES.

"Ready Reading."	Length in feet,	25	50
Feet, inches & 8ths . . . . .	No. N7470 T		N7472 T
Feet, 10ths & 100ths ft. . . . .	N7470 D		N7472 D

Piccolo Woven Tapes are warranted to be of the same grade and workmanship as the Dartmouth K & E Woven Tapes. They differ from the Dartmouth only in size and weight, being very compact and light and, therefore, suitable and convenient for the pocket. For general description of this tape see page 27.



**K & E**

REG. U. S. PAT. OFF.

## WOVEN TAPES.



Line Guaranteed  
Non Metallic.

**SAMSON** Woven Tapes,  $\frac{5}{8}$  in. wide, stout bent leather case, long folding handle. All mountings nickelplated. **Extra-heavy** line, reinforced end. Graduations begin at outside end of ring.

"Ready Reading."	Length in feet,	25	50	75	100
Feet, inches & $\frac{1}{2}$ in. . . . .	No.	7490T	7492T	7494T	7495T
Feet, 10ths & half 10ths ft. . .		7490D	7492D	7494D	7495D

The Samson is a woven line which surpasses all others in durability, and is made especially to withstand the severe conditions of railroad construction, lumbering, dock building, mining, etc. The line is very closely woven and has a coating which protects it from moisture. The tape will prove highly efficient where steel tapes and other woven lines do not give satisfaction owing to their being affected by dampness. Since it has **no metal interwoven in the fabric**, it is a non-conductor of electricity. This fact and its durability have rendered it deservedly popular for measurements in the vicinity of electrical installations.

## WOVEN TAPES RE-FILLS

### FOR SAMSON TAPES

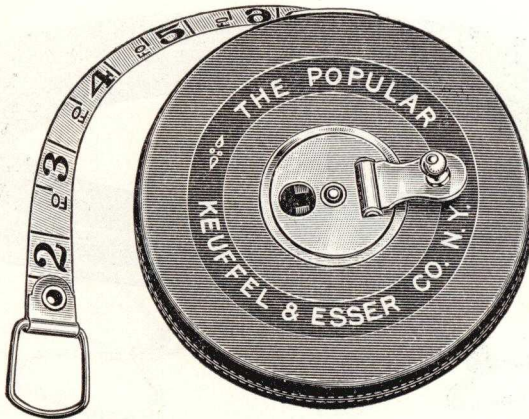
"Ready Reading."	Length in feet,	25	50	75	100
Feet, inches & $\frac{1}{2}$ in. . . . .	No.	7500T	7502T	7504T	7505T
Feet, 10ths & half 10ths ft. . .		7500D	7502D	7504D	7505D





**K & E**  
REG. U. S. PAT. OFF.

## WOVEN TAPES.



**POPULAR** TRADE MARK Woven Tapes,  $\frac{5}{8}$  in. wide, substantial bent leather case, flat folding self-opening handle. All mountings nickelplated. Stout woven line, end reinforced with leather. Graduations begin at outside end of ring.

"Ready Reading".	Length in feet,	25	50	75	100
Feet, inches & $\frac{1}{2}$ in. . . . .	No.	N7510T	N7512T	N7514T	N7515T

The POPULAR is a low-priced, well-made woven tape in stout bent leather case, with durable center and handle. The line is of the usual width and finish of K & E woven tapes, heavily coated, and has leather reinforced end.

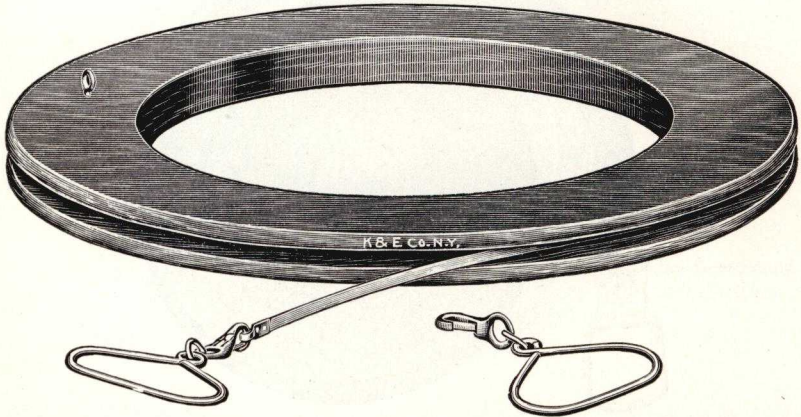


**K & E**  
REG. U. S. PAT. OFF.

## LO-VAR TAPES

REG. U. S. PAT. OFF.

**FOR BASE LINE MEASUREMENTS.**



**LO-VAR Tapes**, are  $\frac{1}{4}$  inch wide, .02 inch thick; and have a coefficient of expansion of about .0000015 per degree Centigrade (about .00000083 per degree Fahrenheit), as against .0000116 per degree Centigrade (about .00000645 per degree Fahrenheit) for the ordinary steel tapes.

Since **LO-VAR Tapes** are intended for precise base line measurements, they carry only the end marks and one or two intermediate marks. **Further subdivision is not recommended.**

- 7590 A.** **LO-VAR Tape**,  $\frac{1}{4}$  in. wide, 50 ft., graduated at 0 and 50 ft. only, on mahogany reel.
- 7590 B.** **LO-VAR Tape**,  $\frac{1}{4}$  in. wide, 100 ft., graduated at 0, 50 and 100 ft. only, on mahogany reel.
- 7590 C.** **LO-VAR Tape**,  $\frac{1}{4}$  in. wide, 150 ft., graduated at 0, 50, 100 and 150 ft. only, on mahogany reel.
- 7590 BM.** **LO-VAR Tape**,  $\frac{1}{4}$  in. wide, 30 Meters, graduated at 0, 15 and 30 meters only, on mahogany reel.
- 7590 CM.** **LO-VAR Tape**,  $\frac{1}{4}$  in. wide, 50 Meters, graduated at 0, 25 and 50 meters only, on mahogany reel.

A suitable spring balance, such as the Tension Handles described on page 25, should be used with these Tapes.

Thermometers (Fahrenheit or Centigrade) which can be clamped to the tape, will be furnished upon order. Prices on request.



KEUFFEL & ESSER CO., NEW YORK

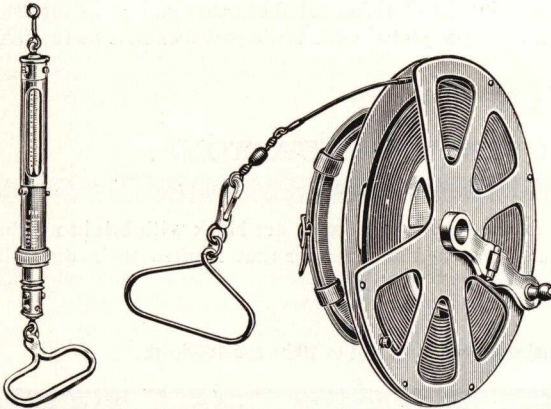
**K & E**

REG. U. S. PAT. OFF.

# CITY ENGINEER'S STANDARD TAPE.

**KECO Finish.**

**(Not Subdivided.)**



No 7600

**7600.** City Engineer's Standard Tape,  $\frac{3}{32}$  in. wide, 50 ft., plated to prevent rust, with improved spring balance adjustable for temperature, with level and thermometer, two nickelplated handles, on aluminum reel.

**7601.** City Engineer's Standard Tape, like No. 7600, but 100 ft.

The spring balance consists of two telescoping nickel silver tubes connected by a strong spring; the inner tube carries the spirit level and tension mark, and the outer one carries the thermometer which is protected by a revolving semi-tubular cover. The thermometer reads to 5 degrees, and is correct to 1 degree; reading being made easy by means of a magnifying prism face. A knurled clamping ring encircles the outer tube; in it is cut a V-shape groove representing the **END MARK** of the measure. The spring balance up to the groove in the ring is **INCLUDED IN THE MEASURE**. On the outer tube is engraved the temperature scale, which compensates expansion and contraction and is marked with the corresponding degrees Fahrenheit. Correction for temperature, *i. e.* allowance for contraction and expansion is made by adjusting the clamping ring on the temperature scale to the degree indicated by the thermometer. The starting point is marked by another V-shape groove in a nickel silver plate at the other end of the tape. There are no intermediate graduations on this tape, and the tension and temperature corrections apply to its entire length only.

## DIRECTIONS.

To use this tape, adjust the clamping ring according to the temperature as read on the thermometer, then bring the V-shape zero groove in the nickel silver lug at the other end of the line exactly over the starting point by means of a suspended plumbbob; pull the telescoping handle until the tension marks coincide, and bring the tape into a horizontal plane by means of the spirit level. A second plumbbob suspended from the V-shape groove on the spring balance will then indicate the terminal point on the ground.



**K & E**

REG. U. S. PAT. OFF.

## FLAT WIRE STEEL TAPES

These tapes are made of the best and toughest flexible steel ribbon, carefully tempered to prevent breaking or kinking.

Etched tapes can be furnished nickelplated but they cannot be furnished plated with white metal. Tapes plated with white metal cannot be furnished with end units etched.

### ETCHED GRADUATIONS.

KECO FINISH.

The lines of K & E etched wire tapes are black with bright numbers and graduations, which are etched in a manner that insures their durability in rough work.

Graduated in feet, extra foot to 10ths and 100ths ft.



No. 7607.

**7607. Flat Wire Tapes, KECO finish,  $\frac{1}{8}$  in. wide, etched, graduated at every foot, extra foot before zero subdivided to 10ths and 100ths ft. (See page 41.)**  
They can be furnished in any length from 100 feet up to 500 feet;  
2 detachable nickelplated brass handles.

Graduated, feet to 10ths and 100ths ft. throughout.



No. 7608.

**7608. Flat Wire Tapes, KECO finish,  $\frac{1}{8}$  in. wide, etched to 10ths and 100ths ft.**  
They can be furnished in any length from 100 feet up to 300 ft.  
2 detachable nickelplated brass handles.

No. 7607 with end feet subdivided instead of extra subdivided foot BEFORE zero, furnished to order without extra charge. (See page 41.)

Reels are listed separately (see pages 38 to 40) and are not included in the price of these tapes.

Fine flat wire steel tapes graduated in Links, Meters, Varas, or other measures, furnished to order at short notice.



KEUFFEL & ESSER CO., NEW YORK

**K & E**

REG. U. S. PAT. OFF.

## FLAT WIRE STEEL TAPES GRADUATED ON BRASS SLEEVES.

**K & E** Fine Flat Wire Steel Tapes with brass sleeves are of the most improved type. The sleeves are firmly clamped (or clamped and soldered) and are notched directly opposite the graduation, for the exact locating of the plumb-bob cord. The ends of the sleeves are beveled to prevent their catching on obstructions when measuring, or on each other when winding or unwinding the tape.

These Tapes can be made in any length up to 500 feet, without joints.

### Graduations on clamped sleeves.



No. 7610.

**7610.** Flat Wire Tapes,  $\frac{1}{8}$  in. wide, graduated on clamped tubular brass sleeves, line heavily plated with white metal (to resist rust), 2 detachable nickel-plated brass handles, graduated every foot, extra foot before zero subdivided to 10ths, (see page 41.) They can be furnished in any length from 100 feet up to 500 feet.

### Graduations on clamped and soldered sleeves.



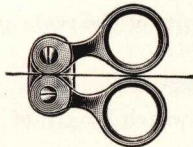
No. 7613.

**7613.** Flat Wire Tapes,  $\frac{1}{8}$  in. wide, graduated on clamped tubular brass sleeves carefully soldered to the tape, to prevent corrosion from moisture entering between sleeves and tape line, heavily plated with white metal (to resist rust), 2 detachable nickel-plated brass handles, graduated every foot, extra foot before zero sub-divided to 10ths (see page 41). They can be furnished in any length from 100 feet up to 500 feet.

These tapes with end feet subdivided instead of extra subdivided foot before zero, furnished to order without extra charge, (see page 41).

Reels are listed separately (see pages 38 to 40) and are not included in the price of these tapes.

Fine flat wire steel tapes graduated in Links Meters, Varas, or other measures, furnished to order at short notice.

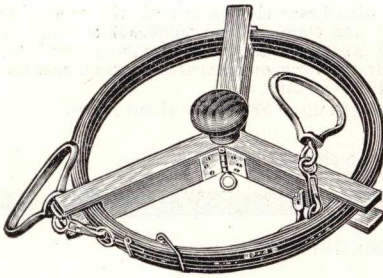


For Clamping Handle to grip any part of tape line,  
and for Tension Handles, see page 25.

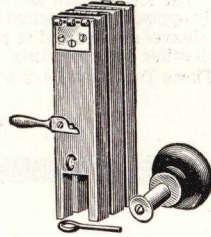


**K & E**  
REG. U. S. PAT. OFF.

## HARDWOOD REELS FOR FLAT WIRE STEEL TAPES

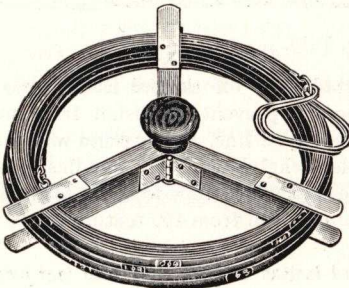


7650 A-1.

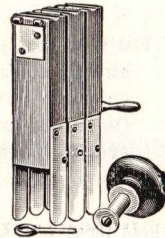


7650 A-1  
folded

**7650 A-1. Folding Reel**, hardwood, plain brass handle and hook to hold one end of line when reeling up; spring clamp to prevent line from unreeling. For flat wire tapes Nos. 7607 and 7608, 100 to 300 ft. long; and flat wire tapes Nos. 7610 and 7613, 100 to 200 ft. long.



7650 A-3



7650 A-3 folded.

**7650 A-3. Folding Reel**, hardwood, similar to 7650 A-1, but reinforced with metal plates. For flat wire tapes No. 7607 and 7608, 400 and 500 ft. long, and flat wire tapes Nos. 7610 and 7613, 300 to 500 ft. long.

**REELS ONLY.** The lines shown on some of the cuts of the reels are for better illustration.

For reels to carry extra long lines, see also page 40.

When ordering reels separately, please state for which length of line and kind of graduation.



KEUFFEL & ESSER CO., NEW YORK

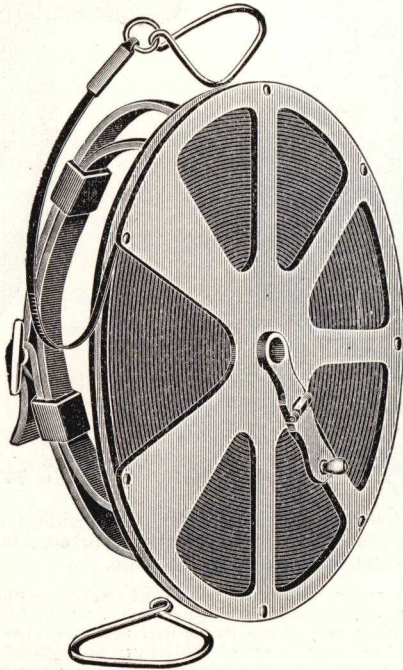
**K & E**

REG. U. S. PAT. OFF.

## METAL REELS FOR FLAT WIRE STEEL TAPES.

The reels here described embody all the latest improvements, the result of years of experience and study. They fill a long-felt want, in that they provide a convenient means for rapidly and correctly assembling the narrow flat wire tapes into a compact and portable form or unit.

Any of the Steel Tapes listed under Nos. 7607 to 7613 can be furnished on the reels here listed, with such limitations as to length as are stated in the descriptions of the reels.



**7650 C-1.** K & E Aluminum Reel with leather strap handle, large center with long folding handle. For lines Nos. 7607 and 7608 (page 36), 100 ft. long.

**7650 C-2.** Similar to No. 7650 C-1, but for lines Nos. 7607 and 7608 (page 36), 200 ft. long, and lines Nos. 7610 and 7613, inclusive (page 37), 100 ft. long.

**REELS ONLY.** The lines shown in the cuts of the reels are for better illustration.

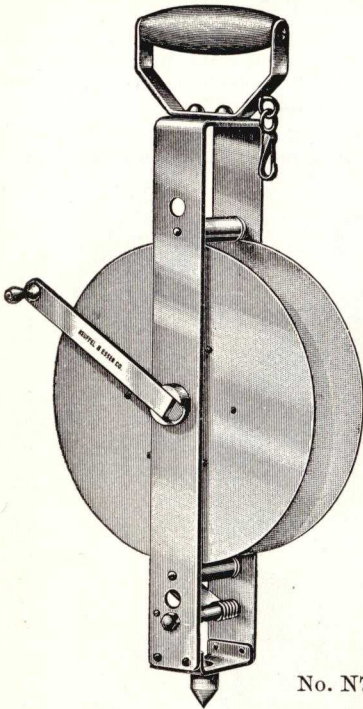
For reels to carry extra long lines, see page 40.

When ordering reels separately, please state for which length of line and kind of graduation.

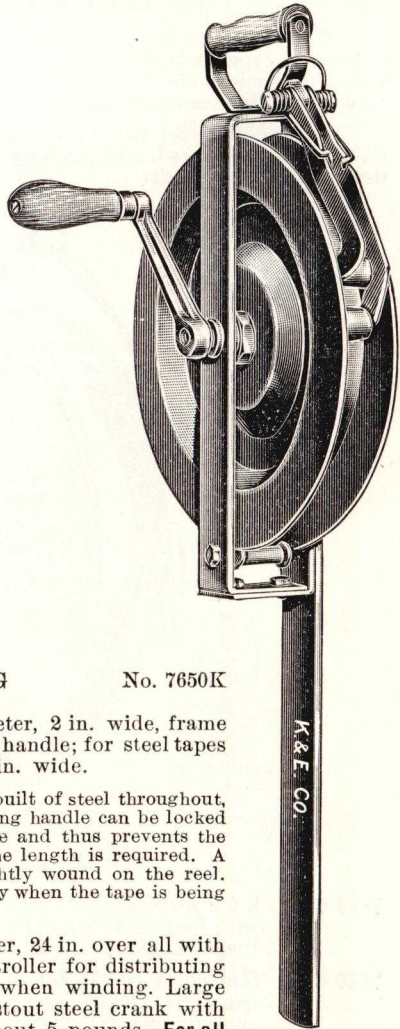


**K & E**  
REG. U. S. PAT. OFF.

## REELS FOR EXTRA LONG STEEL TAPE LINES.



No. N7650G



No. 7650K

**N7650G. Colorado Steel Reel**, 8 in. diameter, 2 in. wide, frame 17 in. long; long folding lock handle; for steel tapes 100 to 500 feet long, up to  $\frac{5}{16}$  in. wide.

The K & E Colorado reel is substantially built of steel throughout, with hardwood supporting grip. A long folding handle can be locked into an opening at either end of the frame and thus prevents the tape from unwinding when only a part of the length is required. A spring hold-down roller keeps the line tightly wound on the reel. A spike point admits of bracing the reel firmly when the tape is being wound or unwound.

**7650 K. Mine Reel**, steel, 10 in. diameter, 24 in. over all with arm extended. Spooling controller for distributing the line evenly on the reel when winding. Large roller to mouth piece. Long stout steel crank with hardwood handle. Weight about 5 pounds. **For all flat wire tapes and band chains** up to  $\frac{5}{16}$  in. wide from 300 to 500 feet long (or 90 to 150 meters long.)

The K & E Mine Reel will be found very convenient for use in mines. It is of steel and very substantially built. The folding steel arm, when extended, supports the reel while winding the tape and is folded across the reel when not required.

When ordering, please mention kind of tape, also width and length, for which the reel is intended.



KEUFFEL & ESSER CO., NEW YORK

**K & E**

REG. U. S. PAT. OFF.

## BAND CHAINS.

Band Chains are intended to be used where the service is too severe for the ordinary type of measuring tapes.

They are made of heavy, tough, durable steel; and the nearly ineffaceable graduations and numbers make them particularly suitable for mining, highway and difficult survey work of all types.

The heavy end loops of all K & E Band Chains are made of stainless steel, rivetted to the ends of the line.

K & E Band Chains are furnished in three styles of end graduations, as follows (see illustrations).

**Style "K"** — Extra foot before zero, subdivided to read backwards.

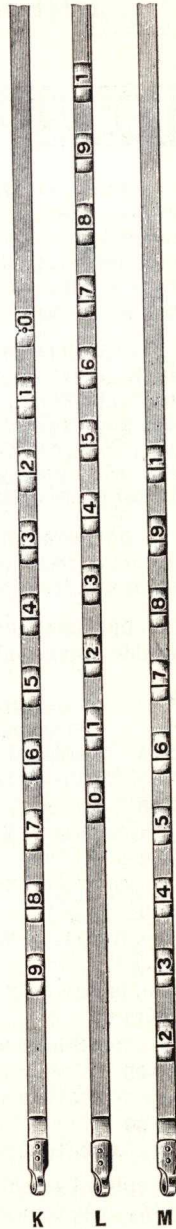
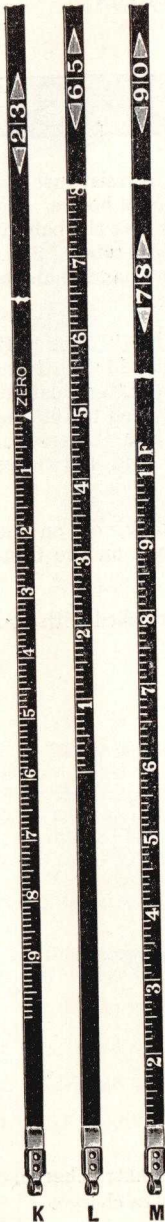
The style "K" graduations terminate at the marks representing (a) 0.9 of a foot, and (b) 0.99 of a foot, depending upon the type of subdivision employed.

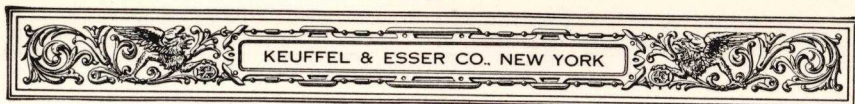
**Style "L"** — First and last foot, first and last link or first and last meter subdivided. Six inch blank space at beginning and end of line.

**Style "M"** — First and last foot subdivided. End loops attached at zero and final marks.

All chains divided to feet will be furnished in style "K," unless style "L" or "M" is specifically ordered.

All chains with divisions other than the foot will be furnished in style "L" unless some other arrangement is specifically ordered.



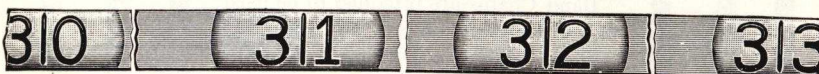


**K & E**

REG. U. S. PAT. OFF.

# DREADNAUGHT BAND CHAINS

TRADE MARK



**DREADNAUGHT Band Chains** are plated with white metal to resist rust and are accurately graduated and plainly numbered on Babbitt metal bosses. The numerals and graduations are marked so deep into the bosses that the babbitt must be practically worn away before the markings are obliterated. Since no water can enter between the babbitt metal bosses and the band chain to produce corrosion, they are well adapted to use in mines.

**DREADNAUGHT Band Chains** are furnished with style "K" "L" or "M" (see page 41) graduation in feet, the extra foot or end feet subdivided to 10ths on Babbitt Metal. Where divided in links they have the style "L" graduation, with graduations and numbers at every link and end links divided to 10ths of links. Where divided in the metric system they have the style "L" graduation, with graduations and numbers at every half meter and end meters divided to decimeters.

**DREADNAUGHT Band Chains** are furnished as lines only, or on the Champion reels described on page 43. They can also be used on the Conqueror and Ironclad reels (see pages 48 and 49).

**DREADNAUGHT Band Chains** without reels are regularly furnished with two rawhide thongs unless nickelplated handles are specified.

Specify style of end graduation wanted.

**7660A Dreadnaught Band Chain, 5/16 in. wide, 50 feet.**

No. 7660A is old No. 7681A-5.

**7660B** " " " " " 100 "

No. 7660B is old No. 7681B-5.

**7660C** " " " " " 200 "

No. 7660C is old No. 7681C-5.

**7660D** " " " " " 300 "

No. 7660D is old No. 7681D-5.

**7660-G** " " " " " 66 " (100 links)

No. 7660-G is old No. 7681BL-5.

**7660-13\*** " " " " " 132 " (200 " )

No. 7660-13 is old No. 7681CL-5

**7660-25** " " " " " 25 meters

No. 7660-25 is old No. 7681BM-5.

**7660-50** " " " " " 50 "

No. 7660-50 is old No. 7681CM-5.

If so ordered a half-gauge (2 ft. 4 1/4 in.) mark is provided, at no extra charge.

3/16 or 1/4 in. width lines can be furnished on order at no extra charge.

\*To order only.



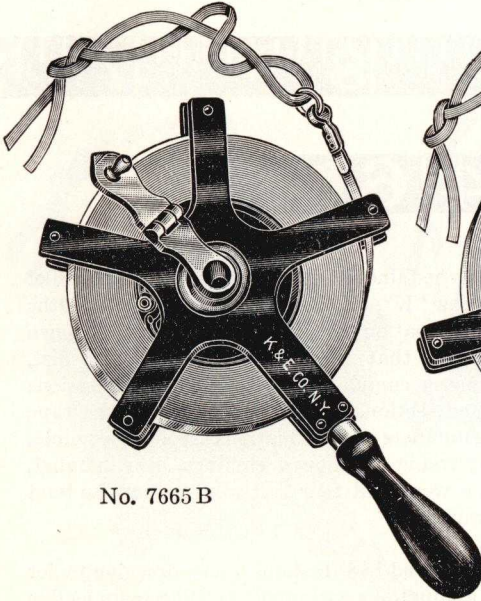
KEUFFEL & ESSER CO., NEW YORK

**K & E**  
REG. U. S. PAT. OFF.

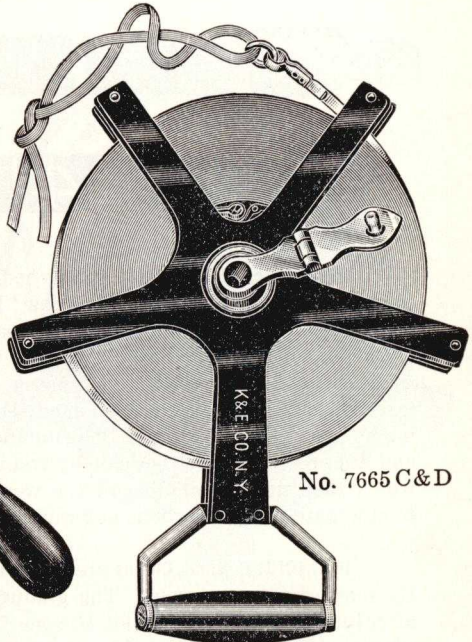
# DREADNAUGHT BAND CHAINS ON CHAMPION REELS.

TRADE MARK

TRADE MARK



No. 7665 B



No. 7665 C & D

The **Champion Reel** has an aluminum frame with black hardened surface. The five metal arms of the reel are so arranged that they hold even the longest chains in position without overlapping. The large center gives durability, and, with the long handle, provides easy leverage for winding. Nos. 7665 A, B, -6 and -25 have a black finished grip of the usual type, whereas Nos. 7665 C, D, -13 and -50 have a black finished D grip. The grips are hardwood.

The heavy **DREADNAUGHT** lines are as described on page 42, and are furnished with two rawhide thongs unless nickelplated handles are ordered.

Specify style of end graduation wanted.

<b>7665A.</b>	Dreadnaught line on Champion Reel No. 7688B,	5/16 in. wide,	50 ft.
No. 7665A is old No. 7701A-5.			
<b>7665B.</b>	" " " " " " " " " " " "	No. 7688B, " " " "	100 "
No. 7665B is old No. 7701B-5.			
<b>7665C.</b>	" " " " " " " " " " " "	No. 7688C, " " " "	200 "
No. 7665C is old No. 7701C-5.			
<b>7665D.</b>	" " " " " " " " " " " "	No. 7688D, " " " "	300 "
No. 7665D is old No. 7701D-5.			
<b>7665-6.</b>	" " " " " " " " " " " "	No. 7688B, " " " "	66 " (100 links)
No. 7665-6 is old No. 7701BL-5.			
<b>*7665-13.</b>	" " " " " " " " " " " "	No. 7688C, " " " "	132 " (200 links)
No. 7665-13 is old No. 7701CL-5.			
<b>7665-25.</b>	" " " " " " " " " " " "	No. 7688B, " " " "	25 meters
No. 7665-25 is old No. 7701BM-5.			
<b>7665-50.</b>	" " " " " " " " " " " "	No. 7688C, " " " "	50 meters
No. 7665-50 is old No. 7701CM-5.			

\*To order only.

For style of end graduations "K" "L" or "M" see page 41.

If so ordered a half gauge (2 ft. 4 1/4 in.) mark is provided, at no extra charge. 3/16 or 1/4 in. width lines on reels can be furnished on order.

For other reels for Dreadnaught Band Chains, see pages 48 to 51.

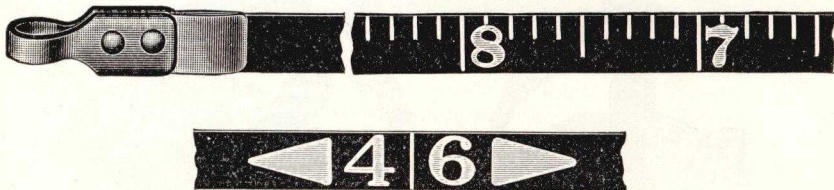


**K & E**

REG. U. S. PAT. OFF.

# INVINCIBLE BAND CHAINS

REG. U. S. PAT. OFF.



**INVINCIBLE Band Chains** are etched lines with graduations in high relief at every foot, end feet (as per options "K", "L" or "M", page 41) to 10ths and 100ths of a foot. The bright graduations and numbers stand well above the black finish of the line proper; so that no depression exists where dirt, moisture or corrosive substances may accumulate. The absence of depressions insures that there are no weakened sections of the line at which the tape might crack if bent sharply. The numbers and graduations are always visible, and are protected on either side by triangular shaped etchings, also in relief, which take up considerable of the wear and tear that would otherwise tend to eliminate the graduations and numbers.

**INVINCIBLE Band Chains** are designed to withstand heavy dragging under the most severe conditions. The graduations and numbers will remain legible after long service, and will not become illegible through clogging. The foot-marks can be readily located by the fingers.

**INVINCIBLE Band Chains** are furnished as lines only, or on the Champion reels described on page 45. They can also be used on the Conqueror and Ironclad reels (see pages 48 and 49).

**INVINCIBLE Band Chains** are furnished with two tough rawhide thongs, unless nickelplated handles are ordered.

Specify style of end graduation wanted.

7670A.	INVINCIBLE Band Chain,	5/16 in. wide,	50 feet
7670B.	"	"	" 100 "
7670C.	"	"	" 200 "
7670D.	"	"	" 300 "

Nos. 7670A to 7670D are old Nos. 7686A to 7686D.

If so ordered a half-gauge (2 ft. 4 1/4 in.) mark will be etched on the line at no extra charge.

For reels for **INVINCIBLE Band Chains**, see page 45 and pages 48 to 51.





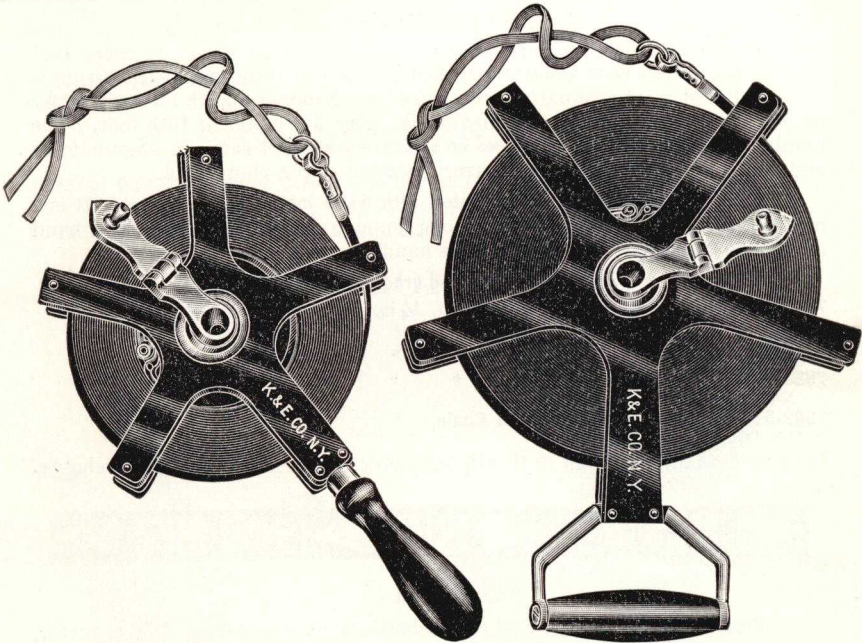
**K & E**

REG. U. S. PAT. OFF.

# INVINCIBLE BAND CHAINS ON CHAMPION REELS.

TRADE MARK

TRADE MARK



No. 7675A & B

No. 7675C & D

The **Champion Reel** has an aluminum frame with black hardened surface. The five metal arms of the reel are so arranged that they hold even the longest chains in position without overlapping. The large centers give durability, and, with the long handle, provide easy leverage for winding. Nos. 7675A and B have a black finished grip of the usual type, whereas Nos. 7675C and D have a black finished D grip. The grips are hardwood.

The **INVINCIBLE** lines are as described on page 44, and are furnished with two rawhide thongs.

Specify style of end graduation wanted.

7675A.	INVINCIBLE line on Champion reel	No. 7688B,	5/16 in. wide,	50 ft.
7675B.	" " " "	No. 7688B,	" "	100 ft.
7675C.	" " " "	No. 7688C,	" "	200 ft.
7675D.	" " " "	No. 7688D,	" "	300 ft.

Nos. 7675A to 7675D are old Nos. 7706A to 7706D.

For style of end graduations "K", "L" or "M", see page 41.

If so ordered a half-gauge (2 ft 4 1/4 in.) mark will be etched on the line at no extra charge.



**K & E**  
REG. U. S. PAT. OFF.

## BAND CHAINS.



### Riveted and Plated

**Riveted and Plated.** The graduations are marked by rivets at every foot or fifth of a meter, **extra foot or end feet** subdivided to 10ths, **end meters** to decimeters (For style of graduation see page 41). Number marks at every meter or 5th foot, with additional indicators at ever 5th meter or 10th foot. The number plates have rounded edges so that they will not catch in obstructions; and they are notched to insure correct location of the plumb-line.

The line is a **heavy ribbon plated with white metal** to resist rust. It is a reliable and substantial chain, strong enough for rough work. These band chains are furnished with two rawhide handles.

#### Specify style of end graduation wanted.

<b>7683 B.</b>	<b>Riveted and Plated Band Chain,</b>	$\frac{1}{4}$ in. wide,	100 feet
<b>7683 C.</b>	" " " " " "	" " "	200 "
<b>7683 D.</b>	" " " " " "	" " "	300 "
<b>7683-25.</b>	" " " " " "	" " "	25 meters
No. 7683-25 is old No. 7683BM			
<b>7683-50.</b>	<b>Riveted and Plated Band Chain,</b>	" " "	50 "
No. 7683-50 is old No. 7683CM			

If so ordered a half-gauge (2 ft.  $4\frac{1}{4}$  in.) mark is provided, at no extra charge.



### Etched

**Etched.** KECO finish. Etched graduations at every foot, link or meter, **extra foot or end feet** and **end links** subdivided to 10ths and 100ths, **first meter** to centimeters with first decimeter divided to millimeters (For style of graduation, see page 41). The graduations are etched in a manner which insures permanence in rough work. These band chains are furnished with two rawhide handles.

#### Specify style of end graduation wanted.

<b>7684 B.</b>	<b>Etched Band Chain,</b>	$\frac{1}{4}$ in. wide,	100 feet.
<b>7684 C.</b>	" " " " " "	" " "	200 "
<b>7684 D.</b>	" " " " " "	" " "	300 "
<b>7684-6.</b>	" " " " " "	" " "	66 " (100 links)
No. 7684-6 is old No. 7684BL			
<b>*7684-13.</b>	<b>Etched Band Chain,</b>	" " "	132 " (200 links)
No. 7684-13 is old No. 7684CL			
<b>7684-25.</b>	<b>Etched Band Chain,</b>	" " "	25 meters
No. 7684-25 is old No. 7684BM			
<b>7684-50.</b>	<b>Etched Band Chain,</b>	" " "	50 "
No. 7684-50 is old No. 7684CM			

If so ordered, No. 7684 Band Chains will be etched with a half-gauge (2 ft.  $4\frac{1}{4}$  in.) mark, at no extra charge.

\*To order only.

For Reels for Band Chains, see pages 47 to 51.



KEUFFEL & ESSER CO., NEW YORK

## K & E BAND CHAINS.

REG. U. S. PAT. OFF.



Etched throughout.

Etched throughout. KECO finish. Etched graduations at every foot, 10th and 100th of a foot throughout. Furnished in style "L" graduation and can be furnished with style "M" graduation upon order (See page 41). This chain combines the close division of the tape with the sturdiness of the band chain.

7685B. Etched Band Chain,  $\frac{1}{4}$  in. wide, 100 feet.

7685C. " " " " " 200 "

## WYTEFACE

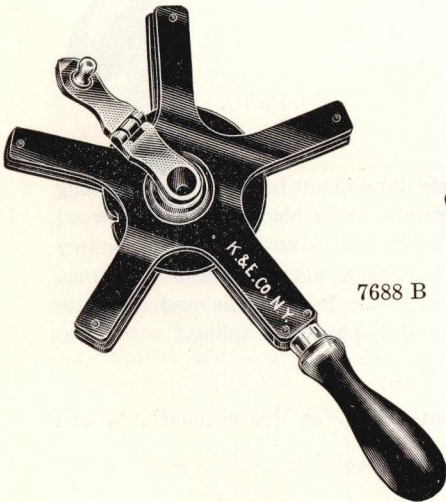
TRADE MARK

W7685B. WYTEFACE Band Chain, similar to No. 7685B. but with black graduations on white background, 100 ft. long.

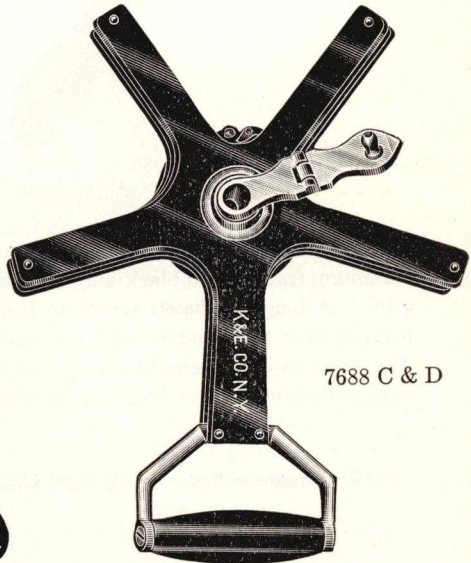
W7685C. WYTEFACE Band Chain, same as No. W7685B, but 200 feet long.

## CHAMPION REELS.

TRADE MARK



7688 B



7688 C & D

The Champion Reel has an aluminum frame, with black hardened surface. The five metal arms of the reel are so arranged that they hold even the longest chains in position without overlapping. The large centers give durability, and, with the long handle, provide easy leverage for winding. No. 7688B has a black finished grip of the usual type, whereas Nos. 7688C and 7688D have a black finished D grip. The grips are hardwood.

7688B. Champion Reel for all Band Chains 100 ft., or less, in length,  $\frac{1}{4}$  and  $\frac{5}{16}$  in. wide.

7688C. " " " " " 100 to 200 ft. long,  $\frac{1}{4}$  and  $\frac{5}{16}$  in. wide, and

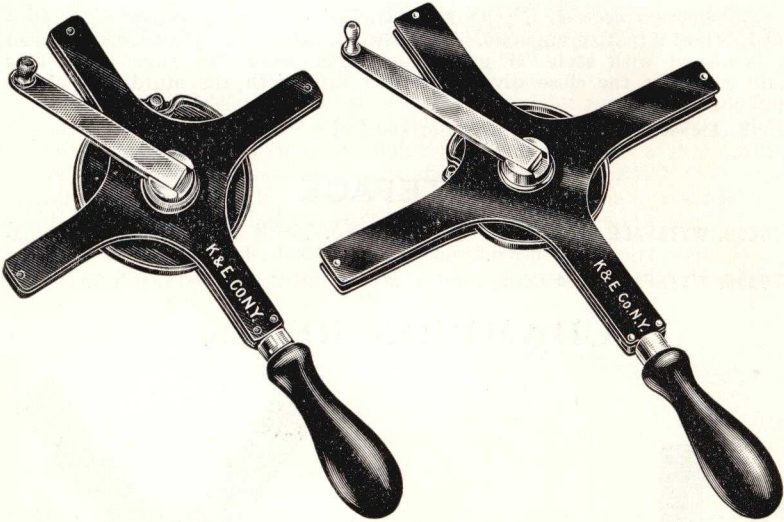
7688D. " " " " " 200 to 300 ft. long,  $\frac{1}{4}$  and  $\frac{5}{16}$  in. wide.



**K & E**  
REG. U. S. PAT. OFF.

## CONQUEROR REELS.

TRADE MARK



No. 7689 B.

No. 7689 C.

The Conqueror four arm reel is not only durable but handy. It has a strong aluminum frame, with black hardened surface, and a black finished hardwood grip. A long lock handle serves to lock the reel in any position by simply turning over the handle until the knob engages against one of the arms. The drum is exceptionally large, and with the long handle and adequate knob, allows plenty of leverage for ease and speed in winding.

**7689 B.** Conqueror Reel, for all Band Chains 100 ft. or less in length,  $\frac{1}{4}$  and  $\frac{5}{16}$  in. wide.

**7689 C.** Conqueror Reel, for all Band Chains 100 to 200 ft. long,  $\frac{1}{4}$  and  $\frac{5}{16}$  in. wide.

When ordering reel separately, please state for which length of line and kind of graduation.

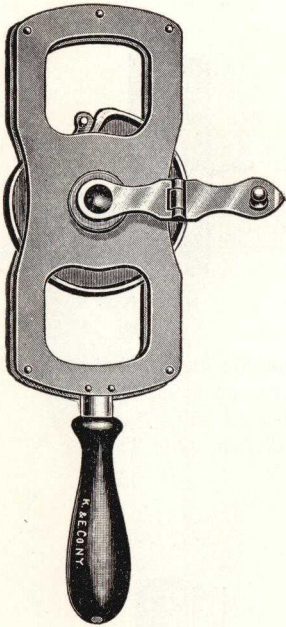




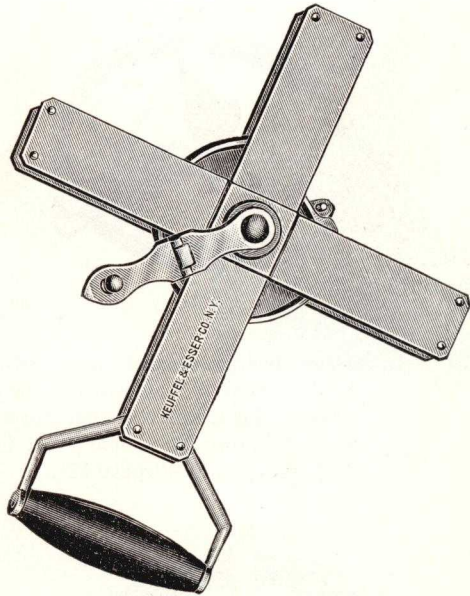
**K & E**  
REG. U. S. PAT. OFF.

# IRONCLAD REELS

TRADE MARK



No. 7690 B



No. 7690 C

The Ironclad Reel is of most substantial construction. This very practical reel consists of strong steel plates, carrying a large center (for quick and easy winding) with extra-long folding brass handle. The side plates prevent tangling of the line in reeling and unreeling. All metal parts of the reel are heavily nickelplated. Nos. 7690B has a black finished grip of the usual type, whereas No. 7690C has a black finished D grip. The grips are hardwood.

**7690B.** Ironclad Reel, for all Band Chains 100 ft. or less in length,  $\frac{1}{4}$  and  $\frac{5}{16}$  in. wide.

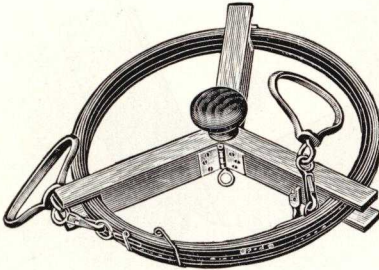
**7690C.** Ironclad Reel, for all Band Chains 100 to 200 ft. long,  $\frac{1}{4}$  and  $\frac{5}{16}$  in. wide.

**When ordering reel separately, please state for which length of line and kind of graduation.**

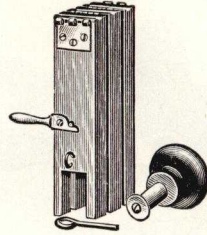


**K & E**  
REG. U. S. PAT. OFF.

## HARDWOOD REELS FOR BAND CHAINS

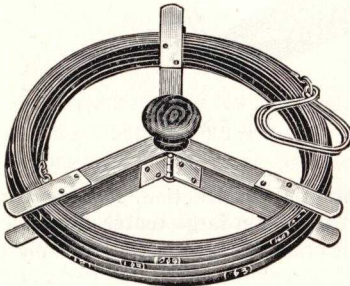


7650 A-1.

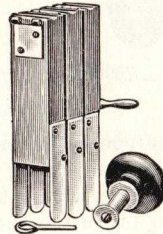


7650 A-1.  
Folded

**7650 A-1.** Folding Reel, hardwood, plain brass handle and hook to hold one end of line when reeling up; spring clamp to prevent line from unreeling. For all Band Chains (pages 42 to 47) up to 200 ft. long; and for Topographic Tapes Nos. 7697-2 and -3 (page 52).



7650 A-3.



7650 A-3. Folded

**7650 A-3.** Folding Reel, hardwood, similar to 7650 A-1, but reinforced with metal plates. For all Band Chains (pages 42 to 47) 300 ft. long; and Topographic Tape No. 7697-5 (page 52).

**REELS ONLY.** The lines shown on some of the cuts of the reels are for better illustration.

For reels to carry extra long lines see also page 51.

When ordering reels separately, please state for which length of line and kind of graduation.

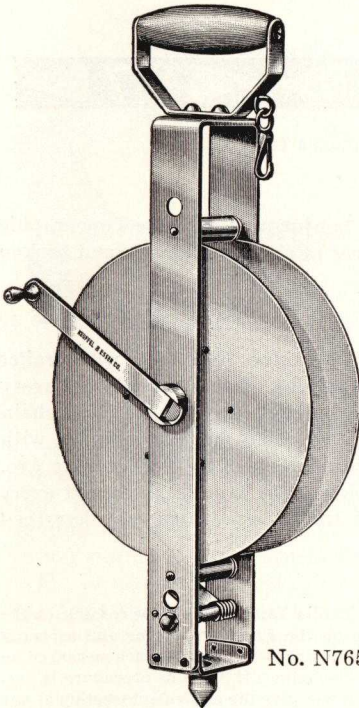


KEUFFEL & ESSER CO., NEW YORK

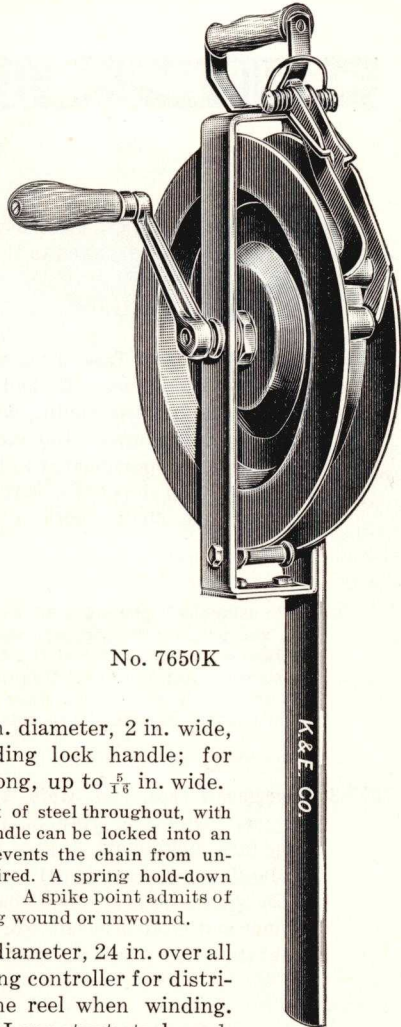
**K & E**

REG. U. S. PAT. OFF.

## REELS FOR EXTRA LONG BAND CHAINS.



No. N7650G



No. 7650K

**N7650G.** K & E Colorado Steel Reel, 8 in. diameter, 2 in. wide, frame 17 in. long; long folding lock handle; for Band Chains 100 to 500 ft. long, up to  $\frac{5}{16}$  in. wide.

The K & E Colorado reel is substantially built of steel throughout, with hardwood supporting grip. A long folding handle can be locked into an opening at either end of the frame and thus prevents the chain from unwinding when only a part of the length is required. A spring hold-down roller keeps the line tightly wound on the reel. A spike point admits of bracing the reel firmly when the tape is being wound or unwound.

**7650K.** K & E Mine Reel, steel, 10 in. diameter, 24 in. over all with arm extended. Spooling controller for distributing the line evenly on the reel when winding. Large roller to mouth piece. Long stout steel crank with hardwood handle. Weight about 5 pounds. For Band Chains up to  $\frac{5}{16}$  in. wide from 300 to 500 feet long (or 90 to 150 meters long.)

The K & E Mine reel will be found very convenient for use in mines. It is of steel and very substantially built. The folding steel arm, when extended, supports the reel while winding the tape, and is folded across the reel when not required.

When ordering please mention kind of tape, also width, and length, for which the reel is intended.



**K & E**  
REG. U. S. PAT. OFF.

## TOPOGRAPHIC TAPES



Graduations — Topographic Tape

The Topographic Tapes, when used in conjunction with the Topographic Abney Level, (see page 53) expedite the labor of chaining in steep and broken country.

**7697-2. Topographic Trailer Tape**,  $\frac{1}{4}$  in. wide, 2 chains (132 feet) with trailer of about 33 feet long. Etched graduations. One side graduated every link for the first two chains, with brass sleeves at the zero, one chain and two chain marks. Beyond the two chain mark is a trailer with graduations proportionated to the graduations of the Topographic Arc. For very steep slopes, the reverse side of the tape is graduated every link for one chain, with a long trailer graduated as described above.

In using the Topographic Arc and the Trailer Tape, take a slope reading on the Arc, and with the Trailer Tape measure on the slope two chains and as many graduations on the trailer as the Arc reading shows. This distance measured on the slope equals a horizontal distance of two chains. If the same procedure is carried out with the reverse face of the tape, it will give the equivalent location of one chain's distance measured horizontally.

**7697-3. Topographic Tape**,  $\frac{1}{4}$  in. wide, 3 chains (198 feet) long. Etched graduations. One side graduated every link for 3 chains. On the reverse face, behind the 50 link, 1 chain and 2 chain marks, are series of graduations proportionated to the graduations of the Topographic Arc. These graduations are finer than those on No. 7697-2, thus admitting of finer and more accurate work. The method of employing this tape is substantially the same as that described under No. 7697-2.

**7697-5. Topographic Tape**,  $\frac{1}{8}$  in. wide, 5 chains (330 feet) long. Etched graduations every link, with correction graduations on reverse face as described under No. 7697-3 but behind the 50 link, and 1, 2, 3 and 4 chain marks.

Nos. 7697-2 to -5 are old Nos. 5713-2 to -5.

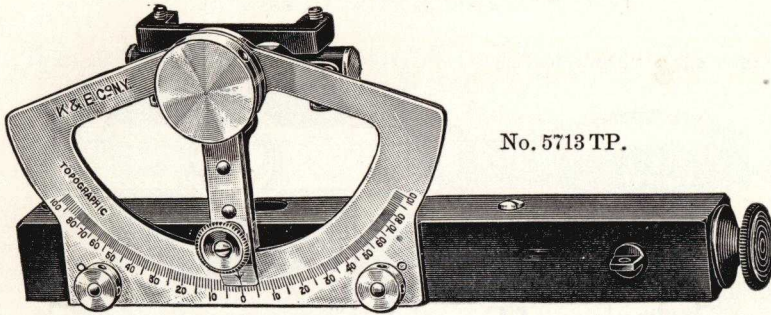




**K & E**

REG. U. S. PAT. OFF.

## TOPOGRAPHIC ABNEY LEVEL



The **K & E Topographic Abney Level**, as made by us for the U. S. Forest Service, is an improved form of Abney level, with draw to eye piece. Its length is  $6\frac{1}{4}$  in., extending to  $7\frac{3}{8}$  in. The bubble tube is large and has adjustment devices similar to those on the bubble tubes of a transit. The long sighting tube and larger bubble lessen the strain upon the eye, and give greater steadiness to the instrument. The radius of the graduated limb is  $1\frac{3}{4}$  in., or about 75 per cent greater than that of the ordinary Abney level. The wide spaces between the graduations make unnecessary the use of a vernier—a point which often appeals to the non-technical user.

**5713PD.** Topographic Abney Level, arc in per cent of grade on one side of limb, **degrees** on other side; in sewed leather case with belt loop.

**5713TP.** Topographic Abney level, arc in per cent of grade on one side of limb, **topographic arc** on other side; in sewed leather case with belt loop.

The graduations on the Topographic Arc indicate the difference in elevation in feet for one chain (66 ft.) of horizontal distance. When used in conjunction with the Topographic Tapes Nos. 7697-2 to 7697-5 described on page 52, the labor of chaining is much expedited in steep and broken country.



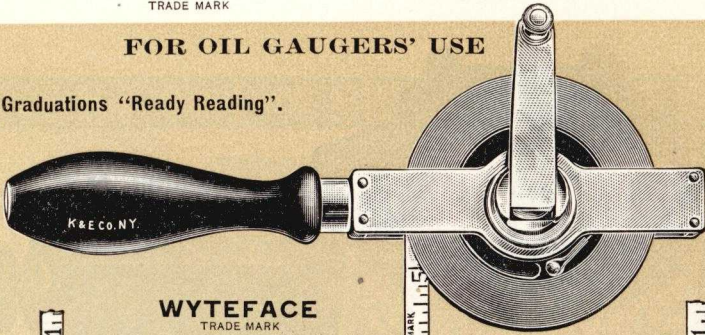
**K & E**  
REG. U. S. PAT. OFF.

# DALLAS WYTEFACE STEEL TAPES.

TRADE MARK

FOR OIL GAUGERS' USE

Graduations "Ready Reading".



**WYTEFACE**  
TRADE MARK



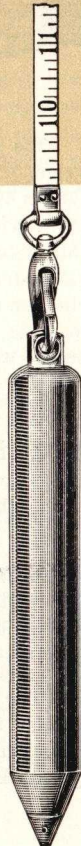
STEEL TAPE LINE



Inage Bobs have the zero at the point of the bob. The graduations on the Inage tape are numbered to represent the distance from the point of the bob. Hence, the oil line reading on the tape (or on graduated Inage bob) gives the depth of the oil remaining **IN** the container.



Outage Bobs have the zero at the inside of the upper end of the eye, and have their graduations numbered from top to bottom. Since the zero of the Outage tape is also the zero of the bob, it follows that the oil line reading on the bob plus the reading on the tape will give the total outage- i.e. the depth of oil that has been taken **OUT** of the container.



Inage Line No. W7731  
with Inage bob No. 7896-3

Outage Tape No. W 7741  
with Outage bob No. 7898-1

Inage Line No. W 7731  
with Inage bob No. 7896-2

All of the lines shown fit the reel illustrated above. See description, page 55.



**KECO BLACK FINISH TAPES**  
with etched graduations will be furnished  
if so ordered.





**K & E**  
REG. U. S. PAT. OFF.  
**WYTEFACE STEEL TAPES.**

TRADE MARK

**FOR OIL GAUGERS' USE**

**DALLAS** TRADE MARK WYTEFACE Steel Tapes for oil gaugers,  $\frac{1}{2}$  in. wide, extra heavy divided feet to inches and eighths, on stainless steel frame with lock handle. All mountings nickelplated. Tape runs freely on the reel and can be held in any position by one simple movement of the lock handle. The long lock handle enables the tape, with the plumb bob attached, to be wound up with but little effort. The tape ends in a swivel snap hook.

The Dallas Tape is an exceptionally strong, tough line, with an extraordinarily rugged swivel snap-hook, carried in a frame that gives a maximum of resistance to wear and rough handling. See illustration page 54.

**DALLAS WYTEFACE INAGE TAPES.**

TRADE MARK

Zero of line about  $6\frac{3}{4}$  inches outside of outer end of swivel snap hook—  
i. e. at point of an inage bob.

Length in feet	Lines on reel, without plumb bob	Lines only, without reel or plumb bob
33 . . . . .	No. W 7721 . . . . .	No. W 7731
50 . . . . .	W 7722 . . . . .	W 7732

Tapes complete, with reel and Inage bob (see pages 54 and 60.)

W 7721 (33 ft.)	{	with 7896-1, 20 oz., not graduated . . . . .	complete
		with 7896-2, 20 oz., not graduated, removable hard metal tip . . . . .	"
W 7722 (50 ft.)	{	with 7896-3, 20 oz., graduated . . . . .	"
		with 7896-8, 8 oz., graduated . . . . .	"

**DALLAS WYTEFACE OUTAGE TAPES.**

TRADE MARK

Zero of line at inside of lower end of swivel snap hook.

Length in feet	Lines on reel, without plumb bob	Lines only, without reel or plumb bob
33 . . . . .	No. W 7741 . . . . .	No. W 7751
50 . . . . .	W 7742 . . . . .	W 7752

Tapes complete, with reel and Outage bob (see page 54.)

W 7741 (33 ft.)	with 7898-1 (see page 60) . . . . .	complete
W 7742 (50 ft.)	with 7898-1 (see page 60) . . . . .	"



**K & E**

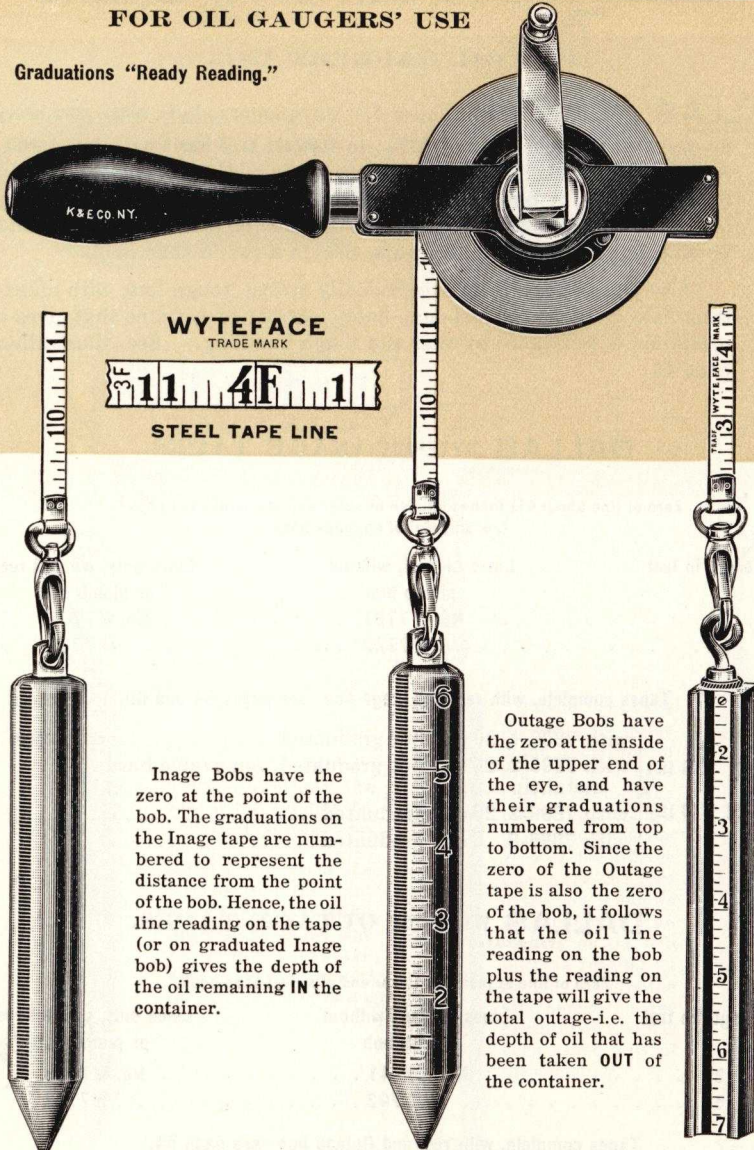
REG. U. S. PAT. OFF.

# **TULSA WYTEFACE STEEL TAPES.**

TRADE MARK

**FOR OIL GAUGERS' USE**

Graduations "Ready Reading."



Inage Bobs have the zero at the point of the bob. The graduations on the Inage tape are numbered to represent the distance from the point of the bob. Hence, the oil line reading on the tape (or on graduated Inage bob) gives the depth of the oil remaining **IN** the container.

Outage Bobs have the zero at the inside of the upper end of the eye, and have their graduations numbered from top to bottom. Since the zero of the Outage tape is also the zero of the bob, it follows that the oil line reading on the bob plus the reading on the tape will give the total outage-i.e. the depth of oil that has been taken **OUT** of the container.

Inage Line No. W 7811  
with Inage bob No. 7896-1

Inage Tape No. W 7801  
with Inage bob No. 7896-3

Outage Line No. W 7831  
with Outage bob No. 7898-1

All of the lines shown fit the reel illustrated above. See description, page 57.



**KECO BLACK FINISH TAPES**  
with etched graduations will be furnished  
if so ordered.





**K & E**  
REG. U. S. PAT. OFF.  
**WYTEFACE STEEL TAPES.**  
TRADE MARK

**FOR OIL GAUGERS' USE.**

**TULSA** TRADE MARK WYTEFACE Steel Tapes for oil gaugers,  $\frac{3}{8}$  in. wide, divided feet to inches and eighths, on aluminum frame, black hardened surface, with lock handle. All mountings nickelplated. Tape runs freely on the reel, and can be held in any position by one simple movement of the lock handle. The long lock handle enables the tape, with the plumb bob attached, to be wound up with but little effort. The tape ends in swivel snap hook. See illustration, page 56.

**TULSA WYTEFACE INAGE TAPES.**  
TRADE MARK

Zero of line about  $6\frac{3}{4}$  inches outside of outer end of swivel snap hook—  
 i. e. at point of an inage bob.

Length in feet	Lines on reel, without plumb bob	Lines only, without reel or plumb bob
33 . . . . .	No. W7801 . . . . .	No. W7811
50 . . . . .	W7802 . . . . .	W7812

Tapes complete with reel and Inage bob (see pages 56 and 60).

W7801 (33 ft.)	with 7896-1, 20 oz., not graduated . . . . .	complete
	with 7896-2, 20 oz., not graduated, removable hard metal tip . . . . .	"
W7802 (50 ft.)	with 7896-3, 20 oz., graduated . . . . .	"
	with 7896-8, 8 oz., graduated . . . . .	"

**TULSA WYTEFACE OUTAGE TAPES.**  
TRADE MARK

Zero of line at inside lower end of swivel snap hook.

Length in feet	Lines on reel, without plumb bob	Lines only, without reel or plumb bob
33 . . . . .	No. W7821 . . . . .	No. W7831
50 . . . . .	W7822 . . . . .	W7832

Tapes complete with reel and Outage bob (see page 56).

W7821 (33 ft.)	with 7898-1 (see page 60). . . . .	complete
W7822 (50 ft.)	with 7898-1 (see page 60). . . . .	"



**K & E**

REG. U. S. PAT. OFF.

# STEVENS WYTEFACE STEEL TAPES.

TRADE MARK

**FOR OIL GAUGERS' USE**

Graduations "Ready Reading"



**WYTEFACE**  
TRADE MARK



**STEEL TAPE LINE**



Inage Bobs have the zero at the point of the bob. The graduations on the Inage tape are numbered to represent the distance from the point of the bob. Hence, the oil line reading on the tape (or on graduated Inage bob) gives the depth of the oil remaining **IN** the container.

Stevens Inage Tape No. W 7882  
with Inage bob No. 7896-8



Outage Bobs have the zero at the inside of the upper end of the eye, and have their graduations numbered from top to bottom. Since the zero of the Outage tape is also the zero of the bob, it follows that the oil line reading on the bob plus the reading on the tape will give the total outage- i.e. the depth of oil that has been taken **OUT** of the container.

Stevens Tape No. W 7352 T  
with Outage bob No. 7898-3  
for Outage Measurements



**KECO BLACK FINISH TAPES,  $\frac{3}{8}$  in. wide.**  
with etched graduations and brown leather case embossed "HOME" will be furnished if so ordered.





**K & E**

REG. U. S. PAT. OFF.

## WYTEFACE STEEL TAPES.

TRADE MARK

FOR OIL GAUGERS' USE

**STEVENS** TRADE MARK WYTEFACE Steel Tapes for oil gaugers,  $\frac{3}{8}$  in. wide, stout bent black leather case, large center, long folding self-opening handle. Patented friction brake. Chromium-plated mountings. Divided to feet, inches and eighths.

## STEVENS WYTEFACE INAGE TAPES.

TRADE MARK

Zero of line about  $6\frac{3}{4}$  inches outside of outer end of swivel snap hook—  
i. e. at point of an inage bob.

Length in feet

Line in Case without  
plumb bob

50 . . . . . No. W7882

Tape complete with Case and Inage bob (see pages 58 and 60).

W7882 (50 ft.)	{	with 7896-1, 20 oz., not graduated . . . . .	complete
		with 7896-2, 20 oz., not graduated, removable hard	
		metal tip . . . . .	"
		with 7896-3, 20 oz., graduated . . . . .	"
		with 7896-8, 8 oz., graduated . . . . .	"

## STEVENS WYTEFACE OUTAGE TAPES.

TRADE MARK

Zero of line at outside end of ring.

Length in feet

Line in Case without  
plumb bob

50 . . . . . No. W7352T

Tape complete with Case and Outage bob (see page 58).

W7352T with 7898-3 (see page 60). . . . . complete

## K & E WYTEFACE

REG. U. S. PAT. OFF.

TRADE MARK

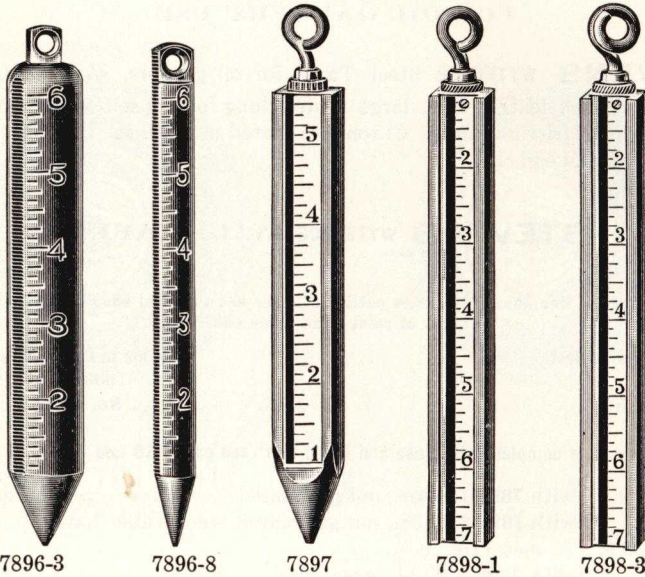
## TANK STRAPPING TAPES

Any K & E Steel Tape,  $\frac{1}{4}$  in. wide, is suitable for tank strapping, and those 100 ft. long, divided to feet, 10ths and 100ths ft., meet the specifications of the American Petroleum Institute Measuring Code. The Maine WYTEFACE tape No. W7175 $\frac{1}{2}$ D, described on page 13, is especially recommended for this purpose.



**K & E**  
REG. U. S. PAT. OFF.

## OIL GAUGERS' PLUMB BOBS.



### OIL GAUGER'S INAGE PLUMB BOBS.

For determining the contents of tanks.

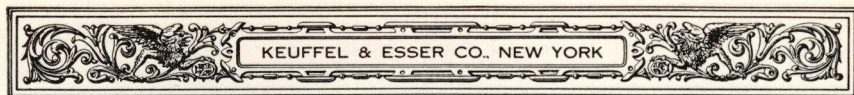
- 7896-1. Oil Gauger's Plumb Bob, brass, 1 in. dia.  $\times$   $6\frac{3}{4}$  in. long. Not graduated, but section of surface rifled to hold oil. Weight 20 oz.
- 7896-2. Oil Gauger's Plumb Bob, like No. 7896-1, but with removable hard metal tip.
- 7896-3. Oil Gauger's Plumb Bob, like No. 7896-1, but graduated upward in inches and eighths, with zero at point of bob.
- 7896-8. Oil Gauger's Plumb Bob, brass,  $\frac{1}{2}$  in. dia.  $\times$   $6\frac{3}{4}$  in. long. Weight 8 oz. Graduated upwards in inches and eighths, with zero at point of bob.
- 7897. Oil Gauger's Plumb Bob, brass,  $\frac{3}{4}$  in. face, about  $6\frac{3}{4}$  in. over all. Weight 16 oz. Graduated on WYTEFACE insert (black graduations and numbers on white background), numbered upward in inches and eighths, with zero at point of bob.

### OIL GAUGER'S OUTAGE PLUMB BOBS.

For determining tank outages.

- 7898-1. Oil Gauger's Plumb Bob, brass,  $\frac{3}{4}$  in. face, about 7 in. over-all. Weight 20 oz. Graduations on WYTEFACE insert (black graduations and numbers on white background), numbered from top downward, with zero at the inside of the top of the eye.
- 7898-3. Oil Gauger's Plumb Bob, brass, similar to No. 7898-1, but with eye designed for tape on which zero is at the outside end of the ring.

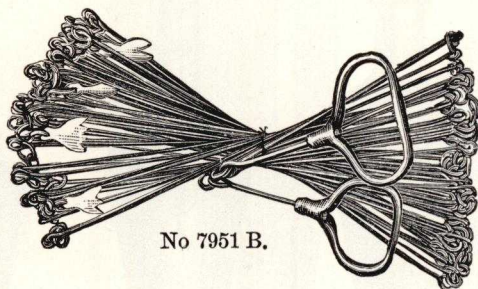




**K & E**

REG. U. S. PAT. OFF.

## MEASURING CHAINS.



No 7951 B.

### STEEL, U. S. STANDARD.

7950A.	Steel,	W. G. 12,	Brass Handles,	oval rings,	50 feet	
7950B.	"	"	"	12, "	"	100 "
7950C.	"	"	"	12, "	"	33 " (50 Links)
7950D.	"	"	"	12, "	"	66 " (100 Links)
7951B.	"	"	"	12, "	"	brazed links and rings, 100 feet
7951D.	"	"	"	12, "	"	66 " (100 Links)

Chain No. 7951 B has a spring hook (snap) at 50 feet, so that it can be separated there and the handle attached for using it as a 50-foot chain.

Nos. 7950A to 7951D are old Nos. 7780A to 7781D.

### STEEL, METER AND VARA.

7952A.	Steel,	W. G. 12,	Brass Handles,	oval rings,	10 meters	
7952C.	"	"	"	12, "	"	20 "
7953A.	"	"	"	12, "	"	brazed links and rings, 10 meters
7953C.	"	"	"	12, "	"	20 "
7955B.	"	"	"	12, "	"	20 varas

The Vara Chains are in Mexican Varas (838 mm). Chains in Varas of other Standards furnished to order.

Nos. 7952A to 7955B are old Nos. 7782A to 7785B.

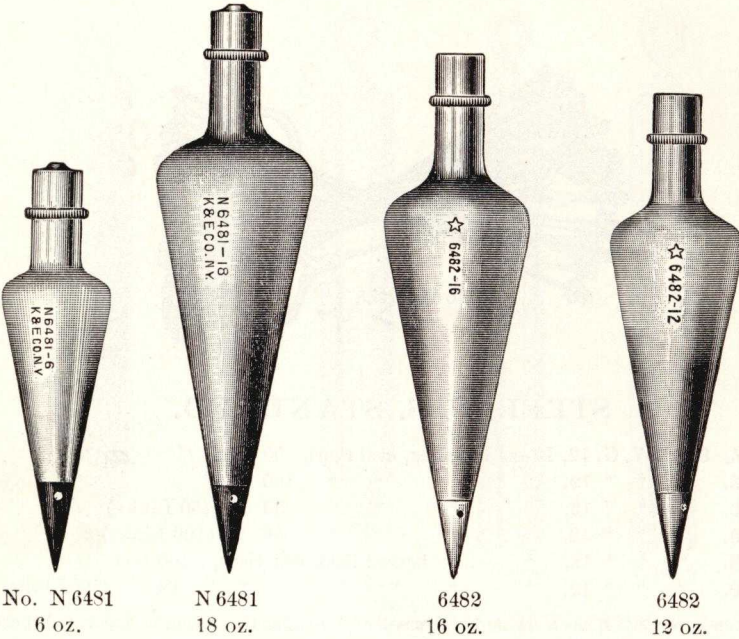
### IRON, U. S. STANDARD.

7956B.	Iron,	W. G. 8,	Brass Handles,	2 round rings,	100 feet	
7956D.	"	"	"	8, "	2 "	66 " (100 Links)

Nos. 7956B and D are old Nos. 7786B and D.

**K & E**

REG. U. S. P/T. OFF.

**PLUMB BOBS**No. N 6481  
6 oz.N 6481  
18 oz.6482  
16 oz.6482  
12 oz.

**N6481. 6 oz. Fine Brass Plumb Bob, with replaceable hardened blued steel point, screw cap,**  
each

8 oz.	"	"	"	"	"	"
12 oz.	"	"	"	"	"	"
14 oz.	"	"	"	"	"	"
16 oz.	"	"	"	"	"	"
18 oz.	"	"	"	"	"	"
24 oz.	"	"	"	"	"	"
32 oz.	"	"	"	"	"	"

**N6481P. Hardened blued steel point with screw thread for No. N6481 . . . . .** "

<b>6482. 4 oz. Plain Brass Plumb Bob, with replaceable steel point, screw cap, . . .</b>	"
6 oz.	"
8 oz.	"
10 oz.	"
12 oz.	"
14 oz.	"
16 oz.	"
18 oz.	"
24 oz.	"

No. 6482 is old No. N6491.

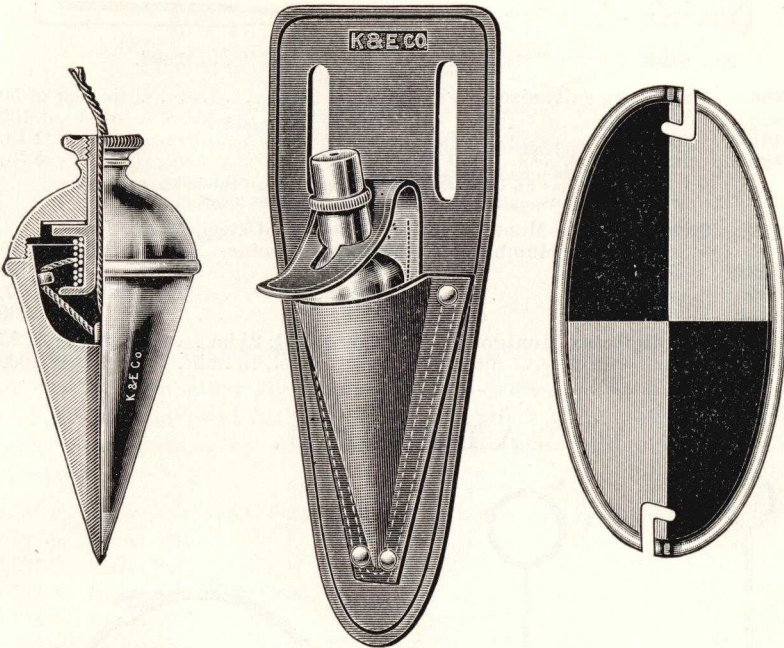
**6482P. Steel point with screw thread for No. 6482 . . . . .** "





**K & E**  
REG. U. S. PAT. OFF.

## PLUMB BOBS



No. N 6487

No. N6491½.

No. 6489

- N6487.** Fine Brass Plumb Bob, with reel inside, on which the line is wound and held by friction at any point of its length, about 10 oz. . . . . each
- N6488.** Plain Iron Plumb Bob, about 5 oz. . . . . “

## SHEATHS, TARGET AND CORD.

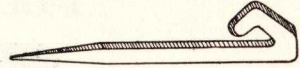
- 6489.** Plumb Bob Cord Target, aluminum, oval form, reinforced edge, 2×4 in. axes, face enameled in quadrants, alternately red and natural bright aluminum, weight about 1 oz. Can be carried in the pocket. Especially suitable for tunnel and mine work . . . . . each
- 6490.** Plumb Bob Cord, best linen, thin, medium or thick. . . per yard  
No. 6490 is old No. 6496.
- 6490½.** Plumb Bob Cord, best braided silk . . . . . “ “  
No. 6490½ is old No. 6497.
- N6491½ A.** Sewed Leather Sheath, sewed and riveted to heavy leather plate, with slots to take belt, and with slotted strap to pass over neck of plumb bob to prevent falling out, for Plumb Bobs weighing 4 to 8 oz. . . . . each
- N6491½ B.** Sewed Leather Sheath, like No. N6491½A, but for Plumb Bobs weighing 12 to 14 oz. . . . . “
- N6491½ C.** Sewed Leather Sheath, like No. N6491½A, but for Plumb Bobs weighing 16 to 24 oz. . . . . “



## STAKE TACKS AND SPADS.



No. 6494.



No. 6498.

6494.	Stake Tacks, galvanized,	tin box of 50
6495.	do. do. "	" " 100
6495-1.	do. do. "	1 lb.
6495-5.	do. do. "	5 lb.

Each tack has an indentation in the surface of the head, so that the plumb bob, if suspended over it, exactly indicates location.

6498.	Surveying Spads, Montgomery's, nickelplated steel, $2\frac{1}{8}$ in., for suspending plumb bob from timbers in mines;	tin box of 50
6498 M.	do. do. do. in bulk,	per 1000
6499.	do. do. do. but $1\frac{1}{2}$ in.	tin box of 50.
6499 M.	do. do. do. in bulk,	per 1000
6500.	Surveying Spads, Montgomery's, stainless steel; $2\frac{1}{8}$ in.	tin box of 25
6500 M.	do. do. do. do. do., in bulk,	per 1000

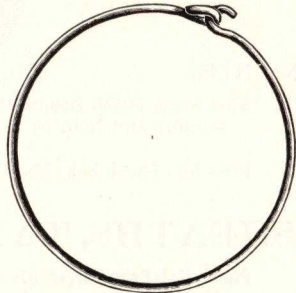
## ARROWS.



No. 6509.



6510.



6520

6509-1.	Steel Arrows, $\frac{1}{4}$ in. dia., enameled alternately red and white, 15 in., set of 11
6509-2.	do. do. $\frac{7}{32}$ " " do. do. do. 14 " " " "
6509-4.	do. do. $\frac{5}{32}$ " " do. do. do. 12 " " " "

Nos. 6509-1 to 4 are old Nos. 7809-1 to 4.

6510.	Steel Arrows, $\frac{3}{16}$ in. dia., nickelplated, 14 in., set of 11
-------	--

No. 6510 is old No. 7810.

6515.	Leather Quiver with belt loop for set of 11 arrows	each
-------	--	------

When ordering No. 6515 state for which catalogue number of arrows.

No. 6515 is old No. N7820.

6520.	Spring Steel Carrying Ring for arrows	"
-------	---------------------------------------	---

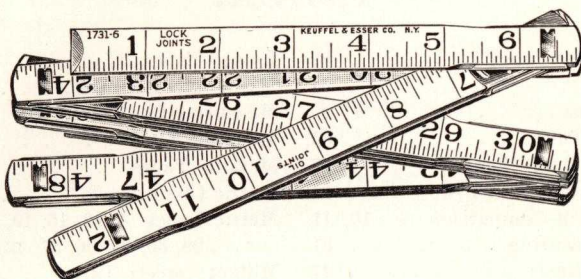
No. 6520 is old No. 7825.





## FOLDING POCKET WOOD RULES

SPRING JOINTS, HARDWOOD,  $\frac{5}{8}$  IN. WIDE.

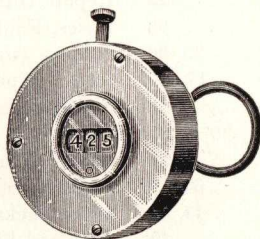


No. 1731

**"BLACK END" FOLDING RULES**, equal in quality to any folding rules on the market, with strong steel springs in their joints, additional locking devices at the joints, and strike plates on the surface of all members which protect the graduations and numbers against the rubbing of adjacent members.

1731-4.	Pocket Rule, Yellow Finish,	4 ft.,	8 fold,	div.	$\frac{1}{16} \times \frac{1}{16}$ in.,	metal tips each
1731-5.	Pocket Rule,	do.	5 " 10 "	"	$\frac{1}{16} \times \frac{1}{16}$ "	" " "
1731-6.	Pocket Rule,	do.	6 " 12 "	"	$\frac{1}{16} \times \frac{1}{16}$ "	" " "
1732-4.	Pocket Rule, White Finish,	4 "	8 "	"	$\frac{1}{16} \times \frac{1}{16}$ "	" " "
1732-5.	Pocket Rule,	do.	5 " 10 "	"	$\frac{1}{16} \times \frac{1}{16}$ "	" " "
1732-6.	Pocket Rule,	do.	6 " 12 "	"	$\frac{1}{16} \times \frac{1}{16}$ "	" " "
1732-6D.	Pocket Rule,	do.	6 " 12 "	"	$\frac{1}{16}$ in. $\times \frac{1}{100}$ ft.	" " "

## TALLY REGISTER



No. 1748.

1748. Tally Register, for keeping count by pressing on a knob, nickelplated, registers to 999, arranged to set back to zero, each
- 1748X. Tally Register, like No. 1748 but registering to 9999, . . . . . "
- Nos. 1748 and 1748X are old Nos. 7854 and 7854X.



## INDEX.

Armor (steel) Tapes . . . . .	22	Lo-var Tapes . . . . .	34
Arrows . . . . .	64	Maine (steel) Tapes . . . . .	13
Band Chains . . . . .	41-47	Measuring Chains . . . . .	41-47, 61
Base Line Tape . . . . .	34	Mending Kit . . . . .	26
Berkeley (steel) Tapes . . . . .	15	Metallic Tapes . . . . .	28-31
Carrying Ring for Arrows . . . . .	64	Metric Chains . . . . .	61
Certificates of Comparison . . . . .	10, 11	Metric Tapes 4, 12, 15, 19, 20, 22, 24, 29, 30, 34, 36, 37, 42, 43, 46, 61	
Chains, Measuring . . . . .	61	Midget (steel) Tapes . . . . .	22
Champion Reels . . . . .	47	Mine Reels . . . . .	40, 51
Circumference Tape . . . . .	21, 24	Tongue and Loop for (Woven) re-fills . . . . .	27
City Engineer's Tapes . . . . .	35	Oil Gauger's Plumb Bobs . . . . .	60
Clamping Handle . . . . .	25	Oil Gauger's Tapes . . . . .	54-60
Coefficient of Expansion . . . . .	9	Official Comparison . . . . .	10, 11
Colorado Steel Reel . . . . .	40, 51	Okeh (steel) Tapes . . . . .	23
Compensatory Handles . . . . .	25	Outage Tapes . . . . .	54-59
Conqueror Reels . . . . .	48	Piccolo (woven) Tapes . . . . .	31
Cornell (steel) Tapes . . . . .	17	Plumb Bob Cord . . . . .	63
Dallas (steel) Tapes . . . . .	54, 55	Plumb Bobs . . . . .	62, 63
Dartmouth (woven) Tapes . . . . .	29	Plumb Bob Target . . . . .	63
Diameter Tapes . . . . .	21, 24	Pocket Tapes . . . . .	24
Dreadnaught Band Chains . . . . .	42, 43	Popular (woven) Tapes . . . . .	33
End Fastener Tapes . . . . .	7, 20, 21, 23	"Ready Reading Tapes" . . . . .	6
Excelsior (Woven) Tapes . . . . .	28	Reels for Tapes . . . . .	38-40, 47-51
Expansion, Coefficient of . . . . .	9	Re-fills (woven) . . . . .	30-32
Flat Wire Tapes . . . . .	36-37	Rensselaer (steel) Tapes . . . . .	18
Folding Rules . . . . .	65	Repairing Tapes . . . . .	26
Forester's Tapes . . . . .	21, 52	Repair Outfit . . . . .	26
Friction Brake . . . . .	8	Rules, Folding . . . . .	65
Handles for Tapes . . . . .	25	Samson (woven) Tapes . . . . .	32
Handy (steel) Tapes . . . . .	23	Slope Tapes . . . . .	28, 52
Harvard (woven) Tapes . . . . .	29, 30	Sounding Attachments . . . . .	60
Home (steel) Tapes . . . . .	17, 20	Spads . . . . .	64
Home End Fastener Tapes . . . . .	20	Spring Winding Tapes . . . . .	24
Hook, Tape . . . . .	25	Stainless Steel Tapes . . . . .	17
Illinois (steel) Tapes . . . . .	19	Stake Tacks . . . . .	64
Inage Tapes . . . . .	54-59	Standard Plumb Bobs . . . . .	62
Invincible Band Chains . . . . .	44, 45	Stanford (steel) Tapes . . . . .	16
Ironclad Reels . . . . .	49	Stated Tension . . . . .	9
KECO Finish . . . . .	5	Steel-cased Tapes . . . . .	22, 24
Land Chains . . . . .	61	Stevens (steel) Tapes . . . . .	20, 21, 58, 59
Liliput (steel) Tapes . . . . .	18		
Lines, (woven) re-fills . . . . .	30-32		





Subdivisions . . . . .	4	Thermometer Scale . . . . .	9
Surveyor's Link Chains . . . . .	61	Tip Top (steel) Tapes . . . . .	24
Surveyor's Pins (arrows) . . . . .	64	Topographic Tapes . . . . .	52, 53
Tally Registers . . . . .	65	Tree Tapes . . . . .	21
Tank Strapping Tapes . . . . .	59	Tulsa (steel) Tapes . . . . .	56, 57
Tape Hook . . . . .	25	Vara Chains . . . . .	61
Tape Mending Tools . . . . .	26	Vermont (steel) Tapes . . . . .	14
Tension Handles . . . . .	25	Wire Tapes . . . . .	36-37
Tension, Working . . . . .	9	Woven Tapes . . . . .	27-33
Texas (steel) Tapes . . . . .	12	<b>WYTEFACE</b> Tapes . . . . .	5, 12-24, 47, 54-59
Thermometer . . . . .	25		

